

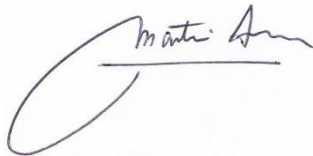
# The process improvement dilemma in dynamic 3PL firms:

## A systems and agency lens

Submitted by Jose Martin Desmaras Luzuriaga,  
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A handwritten signature in blue ink, appearing to read 'Martin Desmaras', is written over a horizontal line.

Jose Martin Desmaras Luzuriaga

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## ABSTRACT

For the past several decades, firms have been shifting from contending as autonomous entities to working and competing as part of supply chains. In this context, warehousing, transportation, and distribution needs are being increasingly outsourced to third-party logistics (3PL) firms. 3PL providers operate in fast-moving, time-sensitive, and priority-changing supply chain environments, constantly demanding efficient, cost-effective, and routinized responses. To attain the ultimate end of maximizing efficiency, reducing costs, and improving customer satisfaction, scholars and supply chain industry opinion leaders alike talk about process improvement as part of a broader organizational learning strategy to be pursued in order to keep a competitive edge.

This thesis explores the relationship between daily bottom-line pressures and prioritization and the design, implementation, and control of process improvement initiatives in complex and dynamic 3PL service providers. It uses a systems-agency lens to unveil intra- and inter-firm relations around process improvement activity and the links with organizational learning. The study utilized multi-case study-based qualitative-interpretive methods used in conjunction with system dynamics and agency tools. Data collection was carried out through in-depth interviews with 41 employees from two 3PL service providers and complemented by two collaborative enquiry exercises organized for each case study firm.

Contrary to recommendations made by scholars and industry leaders, this thesis has found that day-to-day operational firefighting in 3PL scenarios revolving around managing multiple demands, conflicting priorities, and unexpected events often prevail over less tangible process improvement and broader organizational learning goals. This is aggravated by constant cost-reduction pressures centering on human resources headcount deemed critical for the development of learning and improvement practices. Consequently, there is little evidence that the case study firms demonstrate the necessary conditions for process improvement and organizational learning to actually take place.

The study also revealed that when process improvement does happen, its focus mainly centers on customer satisfaction or cost-saving, rather than on the improvement of shop floor work routines aiming at operational effectiveness. It also shows process improvement to be more reactive and *ad hoc* as opposed to the continuous, widespread, and long-term-oriented practices associated with continuous improvement and organizational learning.

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## ACRONYMS

**BPR:** Business Process Re-engineering  
**CI:** Continuous Improvement  
**Col:** Collaborative Improvement  
**CPH:** Cases per Hour  
**CPI:** Continuous Process Improvement  
**CPL:** Cube per Load  
**EDI:** Electronic Data Interchange  
**ETO:** Engineer to Order  
**HACCP:** Hazard Analysis Critical Control Point  
**IB:** Inbound  
**ID:** Influence Diagram  
**JIT:** Just in Time  
**KPI:** Key Performance Indicator  
**LH:** Lead Hand  
**LO:** Learning Organization  
**OB:** Outbound  
**OL:** Organizational Learning  
**OS:** Operations Supervisor  
**RE:** Reasonable Expectations  
**RF:** Radio Frequency  
**RFID:** Radio Frequency Identification  
**RPE:** Revenue per employee  
**PI:** Process Improvement  
**QPID:** Qualitative Politicized Influence Diagram  
**SC:** Supply Chain

**SCM:** Supply Chain Management

**SCI:** Supply Chain Integration

**SD:** System Dynamics

**SOP:** Standard Operating Procedure

**TQM:** Total Quality Management

**WMS:** Warehouse Management System



## CHAPTER 1: Introduction

At a time when globalization and competition intensify, business organizations strive to keep pace with fast-moving environments and are forced to engage on multiple fronts, ranging from cost reduction and speed of response to quality assurance and innovation. For the past several decades, firms have also been shifting from contending as autonomous entities to working as part of supply chains and competing through these networks (Horvath, 2001; Ketchen and Hult, 2007; Kuo, 2013), entailing the optimal management of the physical and information flows exchanged among the upstream and downstream players of a supply chain (Aguezzoul, 2014; Giri and Sarker, 2017). This places firms under additional pressure to better coordinate and integrate business processes, activities, and people and data within and across their organizational boundaries to achieve expected business results.

In response to these coordination and integration challenges, manufacturers and retailers are increasingly decentralizing their operations by outsourcing part or all of their supply chain (SC) functions such as warehousing, transportation, and distribution to third-party logistics (3PL) firms. In many cases, these logistics service providers play an important role in facilitating supply chain integration (SCI) (Ying and Dayong, 2005; Bolumole et al., 2007; Jarayam and Tan, 2010), and in allowing the outsourcing firm to reduce costs, improve performance, and focus on their core competences (Azadi and Saen, 2011; Aguezzoul, 2014; Giri and Sarker, 2017).

To attain the ultimate end of maximizing efficiency, reducing costs, and improving customer satisfaction, 3PL industry executives declare the high value of process improvement (PI) efforts as a source of competitive advantage. Process improvement examples in this industry can be as specific as a) improving truck routing planning by setting up and operating a new software that may be also accessed by clients; b) correcting inventory inaccuracies by implementing a cycle counting technique; and c) coaching operation staff in documenting procedures to report damaged goods. However, executing process improvement initiatives can be difficult to incorporate in firms' everyday activities (Repenning and Sterman, 2004). This problem is potentiated in frenetic 3PL environments with their additional exposure to

multiple demands, conflicting priorities, and unexpected operational events which can be disruptive to the service providers' process improvement implementation efforts.

This study uses systems and agency-based perspectives to investigate process improvement implementation efforts and challenges experienced by 3PL firms in Western Canada. Such organizations operate in fast-moving, time-sensitive, and priority-changing supply chain environments, and are under constant demand to deliver efficient, cost-effective, and routinized responses. This research examines the manner in which every day bottom-line pressures and prioritization impact on the implementation, learning, and outcomes of process improvement efforts by 3PL firms. The focus of the study is mainly on process improvement with insights into organizational learning as a longer-term process.

3PL providers are often highly integrated into supply chain scenarios, playing an important role in connecting suppliers, manufacturers, and retailers who can be part of the same or different networks. Yet, while this investigation places a strong emphasis on these firms' contextual exposure to complex dyadic and multiple dyadic interactions, it essentially centers on process improvement challenges and capabilities at the intra-organizational level. This focus is relevant to the development of a culture of collaboration and performance improvement among members of a supply chain network, as firms need to first better understand and improve their own internal processes so that cross-functional collaboration practices may be enhanced (Stank et al., 2001; Zhao et al., 2011).

Ample literature has been published on process improvement in supply chain settings (Burgess et al., 2006; Pepper and Spedding, 2010; Wang et al., 2010) and its relevance to stay competitive highlighted by industry and scholars alike (Rich and Bateman, 2003; Fawcett et al., 2012; VHI, 2018). Yet, despite the recognized importance of process improvement and the essential role played by 3PLs in modern supply chains as facilitators of supply chain integration (Jarayam and Tan, 2010), and in helping the focal firm reduce costs, optimizes efficiency, and improve customer service (Wallenburg, 2009), limited research has been directed at exploring existing process improvement practices in 3PL environments (see Flint et al., 2005; Wagner, 2008; Busse and Wallenburg, 2011, focusing

mainly on process innovation). What is more, hardly any literature is found on process improvement in 3PL environments to this date and even less so – if any at all – on firms specializing in warehouse services serving as distribution points for retail stores, as is the case in this study.

Based on the above, this study set out to contribute to the organizational learning and process improvement research by exploring the challenges of developing and implementing process improvement initiatives in rapidly changing supply chain environments involving 3PL firms. The research objectives are outlined in the next section.

### 1.1 Research objectives

The purpose of this study is to investigate the impact of conflicting demands and decision-making prioritization on learning and process improvement capabilities faced by 3PL firms providing distribution center services.

The research objectives of this study are as follow:

- 1) To understand the key operational and financial challenges faced by 3PL firms.
- 2) To understand the motivation and effects of task prioritization on the firms' efficiency.
- 3) To examine what motivates process improvement activities and how these initiatives are identified, designed, implemented and monitored over time.
- 4) To explore enablers and barriers around process improvement activities.
- 5) To examine associations between staff at different hierarchical levels around process improvement activity.
- 6) To examine interrelations between the 3PLs and their client(s) around process improvement activity

## 1.2 Relevance of this study to literature and organizations

Organizations involved in supply chains such as 3PL providers claim in industry forums and events in Canada they are constantly striving to maximize efficiency, reduce costs, and optimize customer relations through process improvement. Although most 3PL firms have process improvement goals and action plans in place, managers frequently struggle with the implementation process. In part, this can be attributed to the constant tug-of-war between immediate and often overwhelming performance pressures and organizational learning and process improvement efforts, where the former priority habitually outweighs the latter.

Operational supervisors and lead hands attest to this general perception, recognizing that short-term day-to-day immediacies of issues surrounding staffing, stocking, scheduling, and customer demands, among others, seemingly requiring urgent attention, often prevail over medium and longer-term, less palpable and thereby more difficult to measure process improvement objectives. Repenning and Sterman (2001) formulate that firms that prioritize learning and process improvement will experience rising performance and workers have more time to devote to improving capabilities. In contrast, those organizations that prioritize higher performance goals at the expense of the time spent on improvement will see their process capabilities erode, preventing programs from getting off the ground.

Despite efforts to predict events, firms exposed to frenetic daily routines need to permanently adapt to nonlinear happenings and interactions carrying different degrees of disruption. Predictably, major disturbance factors such as natural disasters, terrorist attacks, and strikes can have significant monetary and operational consequences to supply chains (Barroso et al., 2010). Yet, applying Lorenz's (1963) chaos lens to typical 3PL routines, even seemingly small perturbations as data inconsistencies in a shipment notification, an absent picker, or damaged goods incidents will ripple through the system and generate unforeseeable effects. Being nonlinear, the resulting ramifications are not precisely predictable (Frederick, 1998).

In such a context, 3PL supervisors typically respond to these occurrences without much consideration for the repercussions of their decisions. An unintended consequence may include impacting the development of core competencies built through a process of continuous improvement and enhancement that span a long period of time (Prahalad and Hamel, 1990). To illustrate this with an example, a newly hired forklift operator in training may be randomly assigned to attend to an unanticipated event without considering the disruption generated by this contingency-based decision to this professional's ongoing learning process.

It may be argued that the problem lies in that managers in complex corporate environments rarely perceive the effects of their firefighting *modus operandi* on the long-term development of essential capabilities and competences. According to Sterman (2001, p. 4), "our ability to understand the unfolding impacts of our decisions is poor. We take actions that make sense from our short-term and parochial perspectives, but due to our imperfect appreciation of complexity, these decisions often return to hurt us in the long run". In an array of experiments involving simulations in different organizational settings, Repenning (2001, p. 25) observed that subjects have consistently shown to "grossly overweight the short-run positive benefits of their decisions while ignoring the long-run, negative consequences." Consistent with this, Govindarajan and Trimble (2010) affirm that despite senior managers' efforts to allocate resources to long time horizons, middle and low levels managers will inevitably prioritize short-term targets by which their performance is measured against.

In summary, this study examines the underlying managerial and organizational factors centrally associated to these juxtaposing short-term and long-term prioritization needs. It also explores how and why these conflicting forces impact the performance of distinctive 3PL organizations specializing in distribution center services differentiated by size, technologies, and corporate cultures. Although considerable research has been conducted to address organizational learning and process improvement implementation issues in supply chain environments, additional research is needed to explore the effect of conflicting short-term and long-term prioritizations on the disruption or nurturing of organizational learning and process improvement efforts in 3PL environments.

## CHAPTER 2: Literature Review

This literature review firstly focuses on the definition of supply chain (SC), supply chain management (SCM), and third-party logistics providers (3PLs). The increasing and key role played by 3PLs in supply chain integration (SCI) is also portrayed. In the following section, conceptual differences between the learning organization (LO) and organizational learning (OL) are outlined and barriers to organizational learning examined. Differences between learning and improvement and between process improvement (PI), continuous improvement (CI), and process-oriented continuous improvement are also discussed and implementation challenges of organizational learning and process improvement initiatives in supply chain environments and gaps in literature examined. This is tied together with the study of complex systems in literature. The main two lenses adopted in this work – system dynamics (SD) and agency theory – and their respective tools are illustrated and discussed. The last part of this chapter presents this study's proposed contribution and research questions.

This literature review was largely carried out utilizing online platforms of scientific journals, such as ScienceDirect, Proquest, and Emerald Insight. Moreover, searches of scholarly books and conference proceedings were also conducted. The process typically started by keyword or word string searching on Google Scholar. When seeking to find relations between variables, the Boolean expression “AND” was used (e.g. “organizational learning” AND “supply chain management”).

Over the course of this research, an estimated 900 publications were selected for analysis based on the title, abstract, and number of citations. In addition, referenced literature found in these works was also examined for relevance. The first step in the screening process was to eliminate published material deemed irrelevant based on the abstract. Following this, a deeper appraisal established relevance for inclusion in the review. This search, carried out in different phases over a period of more than three years, identified 304 relevant studies dating from 1957 to 2018.

## 2.1 Supply chain management and 3PL providers

The role of 3PL firms as essential to modern supply chain management has drawn increasing attention from scholars (Selviaridis and Spring, 2007; Jarayam and Tan, 2010; Aguezzoul, 2014). By outsourcing customized transportation, warehousing, and logistics functions to 3PLs, firms can focus on their core competencies. 3PLs are also deemed to play a crucial part in integrating increasingly complex supply chains, enhancing the overall performance of the network (Flynn et al., 2010).

The concept of supply chain has been defined in multiple ways. Although there is no single definition that captures the plurality of supply chain forms (Dubois et al., 2004), a supply chain is essentially described as a network of interdependent entities that seek to integrate efforts collaboratively to attain mutually beneficial results (Håkansson and Snehota, 1995; Bowersox, 1997; Chen and Paulraj, 2004a). Through upstream (i.e. supply of raw materials and components) and downstream (i.e. distribution) linkages, processes can be coordinated between the entities in the pipeline and the focal firm itself (Christopher, 1992). In this way, Christopher (2011) exemplifies, “one goal of supply chain management might be to reduce or eliminate the buffers of inventory that exist between organisations in a chain through the sharing of information on demand and current stock levels” (p. 2).

Supply chain management is a management philosophy that directs supply chain members to focus on developing innovative solutions to create unique, individualized sources of customer value (Mentzer et al., 2001). This requires the management of synergies involving people, organizations, and processes (Lambert, 2014) in such a way that the performance of all members involved contributes to the overall performance of the entire supply chain (Chen and Paulraj, 2004b).

For the above reason, Mentzer et al. (2001) state that when firms implement individual, disjointed supply chain tactics, such as JIT delivery or EDI with suppliers and customers, this does not strictly constitute supply chain management unless these actions are

strategically coordinated over the supply chain. Hence, the synchronization and convergence of intra- and inter-firm and strategic capabilities into a unified, compelling marketplace force is at the heart of the supply chain management philosophy (Ross, 1998).

These supply chain management integrative efforts take place in a context of increasing supply chain complexity, price-pressure, and customer demands (Langley, 2012). Here, 3PL providers are expected to deliver consistently high performance at minimum cost to their clients.

### 2.1.1 Supply chain integration

Supply chain integration is signaled by an array of authors as a key success factor of supply chain management (Mentzer et al., 2001; Simatupang et al., 2002b; Power, 2005; Zhao et al., 2011; Huo, 2012; Lambert, 2014). supply chain integration refers to co-ordination mechanisms designed to support business processes across supply chain networks and which involve overcoming intra- and inter-organizational boundaries (Romano, 2003). Hence, supply chain integration implies the integration of different functions within a company and the external integration with customers and clients (Stank et al., 2001; Zhao et al., 2011) and 3PL service providers (Fabbe-Costes et al., 2009). Integration at the information, operational and relational levels is perceived to facilitate the linkages in supply chain processes between firms (Leuschner et al., 2013).

Several studies point to a positive relation between supply chain integration and performance improvement (See van der Vaart and van Donk, 2008 and Jarayam and Tan, 2010). Leuschner et al. (2013) suggest it can be expected that “firms engaging in integration efforts should experience higher firm performance as a result” (p. 45). Such is the case of the impact of supply chain integration on customer-oriented performance, often generating positive relational outcomes. However, the authors also warn that tighter integration may not always be beneficial. For example, at the inter-firm operational level, “a higher level of integration likely causes temporarily higher costs, and it is possible that the resulting increase in performance is not large enough to recoup those higher costs” (p. 45). Hence,



the impact of supply chain integration on revenue generation or profitability may not always be significant in the short-term.

Other authors debate that the effectiveness of supply chain integration in improving performance will depend on the context of supply (Germain et al., 2008; Gimenez et al., 2012). According to Gimenez et al. (2012), supply chain integration will increase performance provided there is high supply complexity - that is, high variety in products, fluctuating demand, high expectations with regard to flexibility and quality, and/or a high level of innovation in products and processes. At any rate, there are different interpretations, types, and classifications of supply chain integration (See Gimenez et al., 2012 for a more comprehensive description).

#### 2.1.2 The role of third-party logistics (3PL) service firms and supply chain integration

As companies are increasingly working in close collaboration with external partners to remain competitive (Aguazzoul, 2014), an outsourcing trend has increased the use of logistics service providers in past years (Fabbe-Costes et al., 2009; Azadi and Saen, 2011). Giri and Sarker (2017, p. 168) define a 3PL as “an independent enterprise who does not own the product(s) or service(s) but participates in the supply chain and provides logistics services under a contract to the manufacturer, retailer(s) and/or consumers of a product or service.”

In a general sense, the outsourcing of logistics services can be viewed as the use of external service providers to perform formerly in-house logistics activities (Van Laarhoven et al., 2000) aiming at reducing costs, improving operational efficiency and customer value added (Skjoett-Larsen, 2000; Bolumole, 2003). 3PLs have specialized in services ranging from basic services to broad activities (Aguazzoul, 2014), being greater levels of integrated supply chain solutions more associated to 4PL service providers (Fabbe-Costes et al., 2008). Table 1 below describes different types of services that may be encompassed by these firms.

Table 1 – 3PL value chain activities

Value Chain Step	Main Activities
<b>Local Transportation and Warehousing</b>	Local Cargo Consolidation: local gathering of individual shipments
	Regional Haulage: transport between two regions (national, by truck)
	Local Cargo Distribution: distribution of shipments to customers
	Warehousing: storage of goods in warehouses
<b>Global Transportation and Warehousing</b>	Regional Cargo Consolidation: regional gathering of shipments
	Main Haulage: international main transport between two hubs (multimodal)
	Regional Cargo Distribution: regional distribution of shipments
	Warehousing: storage of goods in warehouses and terminals
<b>Logistics management services</b>	Chartering: subcontracting of local carriers, vessels, airplanes
	Consulting Services: Development of customized logistics concepts
	Transportation Management: planning, monitoring and conducting transports, handling and storage of goods
<b>Customized Value-Added services</b>	IT Services: such as track and trace, API, EDI
	Packaging and Labelling: packing, commissioning and labelling of goods on behalf of shippers
	Manufacturing Services: product assembly and contract manufacturing on behalf of shippers
<b>Customer Relationship Management</b>	Special transports and handling: transportation and handling of special goods
	Order processing: acting as interface between shippers and customers
	Administrative support: support for shippers and customers with tasks such as billing and claim handling
	On-demand services: arrangement of service times according to customer needs.

Source: Hofmann and Osterwalder (2017)

According to Vaisliauskas and Jajubauskas (2007), companies find value in 3PL service providers as they “allow saving time mainly due to the outsourcing the logistics functions that can free up resources to focus on core competencies of the company instead of secondary ones” (p. 72). This provides an opportunity for organizations not to tie-up unnecessary capital in costly logistics-related equipment and infrastructure such as trucks

and warehouses (Bolumole, 2003), and to receive value-added services to their existing business (Hertz and Alfredsson, 2002) by improving efficiency and customizing logistics services to different customer segments (Metzner et al., 2001b).

3PL providers and their network of clients are thereby perceived by scholars as playing an important role in modern supply chain management (Giri and Sarker, 2017) and as generally facilitating supply chain integration (Ying and Dayong, 2005; Bolumole et al., 2007; Jarayam and Tan, 2010). In this respect, considering the increased interest in supply chain integration coupled with the growing use of outsourced logistics services, Fabbe-Costes et al. (2008) raise the question about who is integrating into whom. In other words, whether 3PL/4PL become integrated in their clients' supply chains or work as a facilitator for supply chain integration.

In their role of providing efficient and customized logistics services to their clients, 3PL providers need to engage in internal and external integration of processes (Zhao et al., 2011). Organizational learning (OL) has been presented as an important factor for the successful implementation of such supply chain management practices (Hult et al., 2003; Oelze et al., 2016). These include learning and improvement undertakings designed and implemented to optimize processes deemed critical to keeping a competitive edge in supply chain environments (Flint et al., 2005). The next sections will cover literature reviews on these variables and their relations.

## 2.2 Organizational learning and improvement

This section first looks at conceptual distinctions between learning organization and organizational learning and the role of learning and improvement in modern firms. It follows with a description of different organizational learning perspectives and perceived benefits found in literature. Lastly, the review turns attention towards factors that impede firms from achieving organizational learning goals.

### 2.2.1 The learning organization

To survive in an increasingly competitive environment, it is argued that business organizations need to organize for learning (De Geus, 1997; Thomas et al., 2001; Garvin et al., 2008), as this may become the only sustainable source of competitive advantage (Stata, 1989; Senge, 1990). According to Bessant et al. (2003, p. 182), “continuous learning within and between organizations will be a key strategic requirement for building and sustaining future competitiveness.” However, in a business environment with increasingly tougher competition, advances in technology, and changing customer preferences, getting organizations to learn is much more than only a matter of articulating a clear vision, offering the right incentives, and providing adequate training – they need to become learning organizations (Garvin et al., 2008).

Since the term “learning organization” (LO) was popularized by Peter M. Senge in *The Fifth Discipline: The Art and Practice of the Learning Organization* (1990a), a large body of work has explored several variables revolving around this concept, with a special focus on methodological tools to identify and assess the quality of learning processes in organizations. Garvin (1993, p. 3) defines a learning organization as “an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights”. It may also be defined as an organization that facilitates the building of learning capabilities that occur at the individual, group, and organizational levels (Senge, 1990; Gephart et al., 1996; Crossan et al., 1999) and continuously transforms itself as a source of competitive advantage (Senge, 1990; Pedler et al., 1991; Levinthal and March, 1993; Garvin et al., 2008).

Some scholars view firms as learning organizations only if they have developed the capability of learning as a whole system (Senge, 1990a; Gephart et al., 1996; and Marsick and Watkins, 1999a). This means focusing on learning processes that prioritize the larger picture over the near neighborhood (Levinthal and March, 1993). One of the obstacles in realizing this ideal of the LO is that managers in smaller departments and units where critical organizational work is done may find it difficult to assess the extent to which their team’s learning is effectively contributing to the firm as a whole (Garvin et al., 2008).

According to Tsang (1997, p. 74), 'learning organization' and 'organizational learning' are two similar and closely related terms, sometimes used interchangeably, and suggests that while a learning organization refers to a particular type of organization in and of itself, organizational learning is a concept used to describe certain types of activity that take place in an organization. The author outlines a simple relationship between the two: "a learning organization is one which is good at organizational learning" (p. 75).

### 2.2.2 Organizational Learning

Organizational learning has been widely emphasized in literature as *sine qua non* for firms' very survivability and competitiveness in changing environments (e.g., Argyris and Schön, 1978; Garvin et al., 2008; Levinthal and March, 1993; Senge, 1990a). Although stemming from knowledge acquisition of individuals (Senge, 1990a), organizational learning is generally viewed to occur in distinctive organizations with the creation of a corpus of collective knowledge resulting from knowledge exchange and integration (Hedberg, 1981). This collective knowledge, said to be stored in the 'organizational memory' (Walsh and Ungson, 1991, p. 57), can evolve to meaningful action and different behaviour that is replicable throughout an organization (Argyris and Schön, 1978).

Crossan et al. (1999) and similarly Huber (1991) describe organizational learning as a multi-level process (individual, group, and organizational). Through a *feed-forward* dynamic, new ideas and actions flow from the individual to the group to the organization levels, and through a *feedback* dynamic institutionalized learning flows back from the organization to the group and individual levels. This dynamic learning transfer process takes time to occur and influences how people act and think.

According to Argyris and Schön (1978, p. 18), organizational learning occurs when "members of the organization act as learning agent for the organization, responding to changes in the internal and external environment of the environment by detecting and correcting errors". Garvin (1993, p. 12) observes that organizational learning can be traced through the three overlapping phases described below:

*The first step is cognitive. Members of the organization are exposed to new ideas, expand their knowledge, and begin to think differently. The second step is behavioural. Employees begin to internalize new insights and alter their behaviour. And the third step is performance improvement, with changes in behaviour leading to measurable improvements in results: superior quality, better delivery, increased market share, or other tangible gains.*

In line with the above, organizational learning can be viewed as the organizational capability to process knowledge and change behaviour with a view to promote constant improvement in performance (Argyris and Schön, 1978; Fiol and Lyles, 1985; Jerez-Gomez et al., 2005). This implies a mutually dependent relationship between learning and improvement which is discussed in point 2.3.1.

In effect, organizational learning has been conceptualized in the literature in a variety of ways, including as knowledge acquisition, skill learning, adaptation, development of knowledge base, development of shared assumptions, institutional know-how, technical versus social processes, adaptive versus generative processes, and knowledge absorption (see Shani and Docherty, 2009 for a comprehensive list). In this study, special attention is placed on the *technical*, *social* and *adaptive* perspectives as they provide distinct lenses to examine learning in a context where 3PLs need to respond to a complex, multi-organization and dynamic environment.

Advocates of organizational learning as a *technical* process place emphasis on processing information. Easterby-Smith et al. (1999, p. 3) define this perspective as “the effective processing, interpretation of, and response to, information both inside and outside the organization”. Huber (1991), who is presented as an exponent of the *technical* view, suggests that an entity learns if the range of its potential behaviours is changed through information sharing.

Contributors to this perspective, Argyris and Schön (1978) propose three types of learning that occur in organizations: single-loop learning, double-loop learning and deutero-learning.

Single-loop learning involves detecting and correcting errors, using feedback to make necessary adjustments and adaptations, but within established organizational norms and values. Double-loop learning is associated to making major strategic changes to these governing principles. Deutero-learning takes place when the members of an organization learn about previous contexts of learning, reflecting on and inquiring into previous episodes of learning or failure to learn, and is thus related to an organization's capability of enabling or inhibiting learning.

Rather than organizational learning through the processing of information, the *social* perspective places emphasis on how learning emerges from social interaction in natural work settings (Easterby-Smith et al., 1998; Savolainen and Haikonen, 2007). From this *social* constructionist view, beyond what may be found in manuals, training or job descriptions, people construct a shared understanding out of data, even if deemed conflicting and confusing (Brown and Duguid, 1991; Orr, 1996). In other words, data has no value in its own right until people determine what the data means (Easterby-Smith et al., 1999). Hence, context plays an important role in shaping what is learned and how it is learned, and information and knowledge is mostly tacit (Ashworth et al., 2010).

The *social* viewpoint also perceives power, political agendas, and ideology as an intrinsically natural phenomena of social interaction (Coopey, 1995; Easterby-Smith et al., 1999; Lawrence et al., 2005). This stands in sharp contrast to the *technical* perspective for which organizational politics is a threat to learning (Senge, 1990; Argyris, 1978). In dissension with this premise, Coopey (1995) believes a view of a LO founded on the pursuit of shared goals in a climate of collaborative trust and where differences are resolved rationally is but a utopia. Being deeply ingrained in social relations, the author suggests political processes should be better recognized as a means of "facilitating the learning that comes from difference, challenge and conflict" (p. 196).

Research revolving around *adaptive* processes has investigated the relationship between two conflicting dimensions – 'exploration' and 'exploitation'. Coined by March (1991), the dilemma of these opposing variables is described below:

*Adaptive systems that engage in exploration to the exclusion of exploitation are likely to find that they suffer the costs of experimentation without gaining many of its benefits. They exhibit too many undeveloped new ideas and too little distinctive competence. Conversely, systems that engage in exploitation to the exclusion of exploration are likely to find themselves trapped in suboptimal stable equilibria. As a result, maintaining an appropriate balance between exploration and exploitation is a primary factor in system survival and prosperity (p. 71).*

Both exploration and exploitation are essential for organizations (March, 1991; Crossan et al., 1999; Easterby-Smith et al., 1999) operating in a complex and changing world (Cohen et al., 2007). The problem lies in that both processes compete for scarce resources, forcing organizations to make explicit and implicit choices between these two (March, 1991). An additional challenge in managing the exploration-exploitation tradeoff is that the same issues occur at the individual, organizational, and social system levels (March, 1991), resulting in multi-level decision-making problems (Cohen et al., 2007).

To regulate the balance between the exploration-exploitation dilemma, 'ambidexterous' organizational forms are proposed (Tushman and O'Reilly, 1996; Benner and Tushman, 2003; Raisch et al., 2009). Organizational ambidexterity is the ability of an organization to simultaneously pursue to both explore and exploit. In doing so, O'Reilly and Tushman (2013, p. 2) explain that firms are able "to compete in mature technologies and markets where efficiency, control, and incremental improvement are prized and to also compete in new technologies and markets where flexibility, autonomy, and experimentation are needed". From this viewpoint, issues of political nature need to be dealt with for organizational learning to occur. Examples of such problems are when managers suppress or distort information to support their political agendas (March et al., 1991; Easterby-Smith et al., 1999) or when they use information selectively to validate decisions made on different grounds (Easterby-Smith et al., 1999).

### 2.2.3 Barriers to organizational learning

Mechanisms that either prevent organizational learning or, at least, impede its practicability, have been the focus of much attention in past years (Schilling and Kluge, 2009). MIT



scholars put an accent on deficient individual and shared mental models that interfere with learning processes (Kim, 1993; Senge, 1990a; Sterman, 2001). Since learning is unavoidably affected by our cognitive limitations, our understanding of complex cause-effect relationships is consequently thwarted (Senge, 1990a) and can lead us to ‘faulty attributions’ and ‘superstitious learning’ (Repenning and Sterman, 2001, p. 76-77). In a similar line, ‘bounded rationality’ (Simon, 1957, p. 132), the idea that human rationality is constrained by limited information and mental processing abilities, leads people and organizations to base learning from experience on the interpretation of ambiguous events (March and Olsen, 1975).

Rahmandad et al. (2009) investigate how learning is impeded in organizational settings by the time delays between taking an action and observing the results. They conclude that learning is slow and ineffective when such delays occur and payoffs are not adequately taken into account. Firms that prioritize improving performance by building competencies through repetition and practice may do it at the expense of exploring different ways to improve current processes (Rahmandad et al., 2009; March, 1991). In some cases, a preference for decisions that “pay off today”, such as production or sales effort, over product development or process improvement that “pays off in the future” (Rahmandad et al., 2009, p. 311) may lead to a ‘competency trap’ (Levitt and March, 1988, p. 322) or ‘capability trap’ (Repenning and Sterman, 2001, p. 72).

Argyris (1994) points to barriers such as cross-functional turf wars and top management cover-up to avoid putting anyone on the spot (in which case socially ‘upbeat’ behaviour can work as a learning inhibitor). The author also highlights ‘defensive reasoning’ situations where employees “sidestep all responsibility and defend themselves against the charge of inaction” (p. 80) by evaluating and explaining reality in a self-serving manner and blaming others.

Management practices and reward mechanisms may also discourage learning in cases when blind compliance is encouraged (Locke and Jain, 1995). For instance, although standard operating procedures (SOPs) are typically designed to preserve an organization’s

memory and allow it to respond to routine needs in predictable ways (Kim, 1993), their regimentation through controls and rewards can also inhibit raising doubts about current practices (Hedberg et al., 1976). This is especially consequential when a firm's environment changes significantly and previously successful SOPs cannot adapt to the new reality due to absent or deficient double-loop learning processes built into the organization to review their usefulness (Jaeger and Baliga, 1985).

Some scholars argue that the largest barrier to organizational learning is a cultural one (Trompenaars and Hampden-Turner, 1997; Ellinger et al., 2002; Wallenburg et al., 2011). Cultures can prevent learning when the dominant culture of an organization stimulates/enforces refusal to think or change "the way we do things around here" (Bessant and Caffyn, 1997; Locke and Jain, 1995). In such cases, past success can often lead to the assumption that what worked in the past will succeed in the future (Locke and Jain, 1995). Further, people will rarely investigate the relation between actions and outcomes to detect and correct errors unless results have been clearly unsatisfactory (Argyris and Schön, 1978). Argyris (1994) therefore concludes that corporate culture can work as an impediment to organizational learning if it cannot get people to dig deeper and reflect on their work and behaviour.

In line with the above, Simon (1991, p. 128) states that a major topic in organizational learning is "an understanding of the mechanisms that can be used to enable an organization to deviate from the culture in which it is embedded". In that sense, turnover of personnel can be deemed positive to facilitate change (Simon, 1991) as new hires are more likely to contribute new knowledge than old-timers (March, 1991). However, March (1991) points out that the effectiveness of learning from new organizational members can be threatened if a firm's turnover levels are high and the socialization process hasty, forcing individuals to adapt to an organizational code before the code can actually learn from them. Turnover can also result in a loss of organizational memory since "much of the memory of organizations is stored in human heads, and only a little of it in procedures put down on paper" (Simon, 1991, p. 128).

Garvin et al. (2008) observe that top-down recommendations related to firm-wide learning are frequently difficult to implement, especially when managers find it hard to establish the sequence of steps necessary to move forward. This can be aggravated if different departments lack standards and tools to assess progress in learning. “Without these”, Garvin et al. (2008) affirm, “companies could declare victory prematurely or claim progress without delving into the particulars or comparing themselves accurately with others” (p. 110).

Barriers to organizational learning are also erected when power structures undermine open and critical communication between subordinates and their supervisors (Coopey and Burgoyne, 2000; Bisel et al., 2012). When management practices suppress dissent, this may result in subordinates’ reluctance to disagree with supervisors or share information related to internal deficiencies and external threats they have identified (Bisel et al., 2012; Morrison and Milliken, 2000). Organizational norms associated with conversational routines may also inhibit information and knowledge from being shared across functional areas (Yukl, 2009; Mengis and Eppler, 2008). Baker et al. (2005, pg. 425) exemplify: “[...norms determine what can be said and not said, what and who is heard and not heard, who has voice and who does not have voice...who is in and who is out of the conversation.]”

Finally, Locke and Jain (1995) point to other organizational learning barriers which include:

- a) pressure for success without allowing some trial and error first (including some failures);
- b) lack of feedback on performance potentially leading to inappropriate learning or no learning at all;
- c) failure to convert newly acquired knowledge into organizational policies, procedures, and routines;
- d) Refusal to share information; and
- e) emphasis on short-term only.

The above list of obstacles to organizational learning is by no means all-encompassing (for a more comprehensive account see Schilling and Kluge, 2009). However, it highlights the numerous challenges faced by organizations attempting to design, implement and measure learning and improvement practices at the functional and firm-wide levels. Major themes arising as organizational learning barriers from this section are:

- a) Individual and shared mental model deficiencies;
- b) Loss of organizational memory;
- c) Resistance to reflect or change;
- d) Preference for immediate results;
- e) Power relations inhibiting communication and sharing;
- f) Inadequate organizational learning measurement tools.

## 2.3 Process improvement

This section begins by examining relations between learning and improvement found in the literature, including learning conducive to or constraining improvement, links to performance, and the role of process understanding. Next, process, process capability, and process improvement are conceptualized. Thirdly, some process improvement approaches, techniques, and methods are outlined. Lastly, connections are established between organizational learning and process improvement, and distinctions are made between process improvement, Continuous Improvement (CI), Continuous Process Improvement (CPI), Collaborative Improvement (Col), and Business Process Re-engineering (BPR).

### 2.3.1 The relation between learning and improvement

Learning is perceived by many scholars as the underlying source of improvement in organizations (Argot and Epple, 1990; Senge, 1990a). When firms review and reflect upon current practices they can learn how to better do their work (Spear, 2004; Trompenaars and Coebergh, 2014) by identifying areas for improvement within their organizations (Garvin et al., 2008; Spekman et al., 2012) or against competitors (Barnett and Hansen, 1996; Garvin et al., 2008). This learning involves cognitive and behavioural changes, which typically precede improvements in performance (Garvin, 1993).

Improvements occur when the actions or changes in behaviour are superior to the original behaviour, leading to greater efficiency, innovation, productivity and quality of service (Ashworth et al., 2010). However, a critical challenge in implementing behavioural change

is the difficulty in learning new behaviours to the point where they become routines (Bessant and Caffyn, 1997).

Another problem in associating learning to improvement is that, while all organizations learn, it is not always for the better (Gephart et al., 1996; Kim, 1993). Some firms develop capabilities consistent with their objectives and deliberately move toward organizational learning, while others make no focused effort and acquire habits that are counterproductive (Kim, 1993). Since the word 'learning' tends to have a positive connotation, it is generally associated with improvement in performance (Dodgson, 1993; Tsang, 1997), regardless of whether there is evidence of actual improvement taking place (Ashworth et al., 2010; Locke and Jain, 1995). In fact, organizations can learn the wrong thing or reach false conclusions (Locke and Jain, 1995). Huber (1991, p. 89) illustrates this in the following way:

*Learning does not always increase the learner's effectiveness, or even potential effectiveness. Learning does not always lead to veridical knowledge. Sample data are not always representative and new findings sometimes overturn what was previously "known to be true." Entities can incorrectly learn, and they can correctly learn that which is incorrect.*

Further, Locke and Jain (1995) point out that not all organizational action and performance derive from learning. For instance, improvement in performance may be the result of organizational learning as well as other factors, such as a favourable business environment, economies of scale, or simply good management practice.

Darr et al. (1995) suggest that cumulative experience is conducive to improvements. In consonance with this view, Bapuji and Crossan (2004) assert that empirical evidence backs the relation between learning from past experience and performance improvement. However, here too learning effectively can be challenging as different people and groups in an organization base their interpretation of complex worlds on limited samples of ambiguous experiences (Brehmer, 1980; Levinthal and March, 1993) and may not uniformly conceptualize the meaning and implications of what happened in the past (Locke and Jain, 1995). This may be especially accentuated when organizational learning is conditioned by

politically motivated lessons drawn from internal competition and conflict (March et al., 1991). Hence, even though learning from prior experience can help organizations, it can also affect their ability to improve (Tripsas and Gavetti, 2000).

Ashworth et al. (2010) suggest that the problem in linking learning and improvement is that organizational learning is both a process (e.g. knowledge acquisition and dissemination) and an outcome (e.g. performance), making it difficult to determine the impact. Teece et al. (1997) argue that the foundations for learning and improvement lie in the understanding of processes. In other words, an organization cannot improve what it does not understand. Without deep process understanding, the authors assert that learning can be confined to proceeding through trial and error. Hence, process thinking is thought to be essential to long-term organizational success (Flint et al., 2005).

### 2.3.2 Organizational processes and process improvement

In a world in constant change, demanding fast and participative responses, organizations are increasingly becoming process-oriented to shape agile and flexible enterprise structures (Hammer, 1997; McCormack, 2001; Smart et al., 2009). Davenport (1993) describes a process as “a structured, measured set of activities designed to produce a specific output for a particular customer or market” (p. 5). Processes need to be managed to ensure they are well-designed and oriented towards performance improvement (Hammer, 2002). They may be also measured to optimize process performance against both customer requirements and economic targets (Smart et al., 2009).

In organizations today, processes are increasingly being used to integrate activities across functions and organizations (Dean and Bowen, 1994; Lambert et al., 2005). Recently, Lambert (2014) proposed a classification of supply chain processes into the following eight categories: a) customer relationship management; b) supplier relationship management; c) customer service management; d) demand management; e) order fulfillment; f) manufacturing flow management; g) product development and commercialization; and h) returns management.

By increasing its process capability – i.e. the inherent ability of processes to produce the planned results – an organization can better predict and measure its processes and eliminate or control the most significant causes of loss in quality and efficiency (Ahern et al., 2004). This involves greater efforts allocated to improving processes rather than merely focusing on the achievement of tasks (Hammer and Stanton, 1999) to develop unique and difficult-to-replicate capabilities (Teece, 2007).

Process improvement can be defined as a method of improving the way a discrete set of business activities is organized and managed (Cook, 1996), with the purpose of achieving performance and competitiveness gains (Kock, 1999). Pioneered by Japanese automobile manufacturers, process improvement aims at enhancing a firm's performance in time, cost and quality (Pastinen, 2010) by understanding and improving a company's end-to-end business processes (Hammer, 2002; Burgess et al., 2006), including interactions with external organizations – customers, suppliers, vendors, etc. (Loshin, 2011).

Berente and Lee (2014) point to three broad steps involving process improvement: a) understanding an existing process; b) designing the process improvement; and c) implementing the improvement. The authors state that these efforts aim at helping firms achieve incremental innovation by emphasizing existing process issues and existing customer needs.

Over the last decades, a myriad of process improvement approaches, techniques, and methods have been designed and applied by different organizations to improve the overall effectiveness of their business processes (Andersson et al., 2006; Pepper and Spedding, 2010). According to Loshin (2011, p. 55), process improvement programs essentially focus on “the interaction of processes from across the organization, their interdependencies, and where the inefficiencies and ineffectiveness can be identified and eliminated”.

Well established process improvement programs such as Lean, continuous improvement, total quality management, Six Sigma, and business process reengineering, to mention some, are systemic approaches designed for organizations to optimize efficiency and

remove waste from their processes. Despite differences in scope and approach, these programs share the emphasis on the measurement, improvement, and rationalization of organizational processes (Benner and Tushman, 2003).

### 2.3.3 Organizational learning and continuous improvement of processes

Considerable research has found organizational learning and process improvement programs to be inextricably bounded (Barrow, 1993; Savolainen and Haikonen, 2007; Wang and Ahmend, 2003) and thought to enhance performance when used conjointly (Barrow, 1993; Repenning and Sterman, 2001; Lee and Lee, 2015). This synergic approach involves the exploration of new capabilities through learning and experimentation while simultaneously exploiting existing ones through process routinization and standardization (Benner and Tushman, 2003; Teece et al., 1997). Both organizational learning and process improvement have their own specific definitions in literature which are explored below.

The collective action of the firm to detect the unwanted outcome and its correction implies a continuum of internal changes which in turn will lead to constant improvement and innovation (Jerez-Gomez et al., 2005). Continuous improvement (CI) may be defined as a constant effort aiming at boosting organization-wide performance through incremental changes in processes (Bessant and Caffyn, 1997; Wu and Chen, 2006; Mitki et al., 1997). Bhuiyan and Baghel (2005, p. 761) also define continuous improvement as “a culture of sustained improvement targeting the elimination of waste in all systems and processes of an organization”.

Although process improvement and continuous improvement are often used interchangeably (Matthews and Marzec, 2017), continuous improvement is mostly characterized in literature as learning and improvement efforts over a sustained period of time involving the whole organization (Rich and Bateman, 2003). Thus, while isolated and *ad hoc* improvement activities can be defined as a form of process improvement, these efforts don't strictly fall within the definition of continuous improvement unless they are part of widespread and sustainable learning and creative problem-solving routines.



According to Garvin (1993), learning is a prerequisite for continuous improvement as efforts to continually improve would not succeed without a commitment to learning. In a codependent manner, continuous improvement is also viewed as a driver for learning more as it constantly demands something new (Garvin, 1993). Hence, continuous improvement is recognized as an enabling mechanism in organizational learning (Garvin, 1993; Bessant and Francis, 1999).

Bessant and Caffyn (1997) suggest that effective continuous improvement implementation requires a corporate culture change towards an active participation in the process at all levels of an organization. From this perspective, continuous improvement is defined as “an evolutionary learning process associated with acquiring and routinising key behaviour patterns and diffusing them across the whole organization” (p. 21). The authors point to five stages in the evolution of continuous improvement capability – from the initial acquisition of the continuous improvement habit to the development of a full-scale learning organization. As organizations progress through the different stages, they absorb an increasing number of behavioural routines involving both learning and unlearning. The final stage in the evolution is ‘Full continuous improvement capability’, where organizational learning reaches its maximum potential.

The extension of continuous improvement beyond organizational boundaries is investigated by Cagliano et al. (2005). Their case study-based research explores the implementation challenges of a model of ‘collaborative improvement’ (Col) at the inter-firm level. Unlike continuous improvement activities within an organization that can be more emergent and spontaneous, the authors indicate that Col requires more structure and direction. They also point to goal alignment and commitment to collaborating and learning across the network as critical prerequisites for a successful implementation of Col.

#### 2.3.4 Process-oriented continuous improvement

Different continuous improvement initiatives, such as Kaizen, Total Quality Management, and Six Sigma, direct much attention to process improvement. Although continuous improvement can be defined in many ways (see Bhuiyan and Baghel, 2005, for a

comprehensive illustration), it is generally viewed as a method to constantly improve products, services, and processes through small, incremental improvements. According to Bhuiyan and Baghel (2005, p. 65), “continuous improvement can occur through evolutionary improvement, in which case improvements are incremental, or through radical changes that take place as a result of an innovative idea or new technology.”

In the 1990s, some authors proposed Continuous Process Improvement (CPI) as a progression of continuous improvement (Davenport, 1993; Macdonald, 1995; Harrington, 1995). From these authors’ perspective, continuous process improvement is viewed to evolve from small and incremental improvements, typically functionally-based, to continuous firm-wide process-oriented changes with moments of ‘radical process change’ (Davenport, 1993, p. 23) or ‘breakthrough improvements’ (Harrington, 1995, p. 31), where existing processes may dramatically change shape to address new technological trends, customer demands or competitors’ competitive edge. These changes are not perceived as radical as the “let’s start from scratch” core philosophy of Business Process Re-engineering (BPR) proposed by Hammer and Champy (1993).

Business process reengineering is viewed by some as having an excessive concentration on achieving short-term objectives and large structural changes based on newly-designed processes, without paying sufficient attention to team building and cooperation within process organizations which can only be constructed over time (Schal and Schael, 1996). The difficulty in conducting major process restructuring on par with effective changes in organizational culture that require better alignment to the newly re-engineered environment is believed by some critics to raise the risk of failure in implementation (see Al-Mashari and Zairi, 1999 for a comprehensive literature review on business process reengineering implementation challenges).

Although sharing the process-centeredness with business process reengineering, continuous process improvement is distinguished by a focus on understanding, evaluating and improving existing (except for the occasional “breakthrough” moment) firm-wide processes over a long period of time. Through continuous process improvement, processes

are constantly mapped out to identify areas of improvement, including the removal of waste and duplication, non-value steps, and workflow inefficiencies. Ward (1994, p. 74) describes continuous process improvement in the following manner:

*Continuous process improvement involves documenting, analyzing, and measuring all activities performed by the organization. Errors are analyzed for their root causes and aggressive action is taken to eliminate these causes so that errors do not recur. Steps that are unnecessary or do not add value are eliminated. Processes are standardized and simplified to limit variability. The focus is always on the process, not on the product or on the individual performing the process.*

Human resource enhancements and managerial commitment are recognized to be essential to any continuous process improvement program's success (Powell, 1995; Ahire et al., 1996; Savolainen and Haikonen, 2007). This involves empowering employees by encouraging them to learn and improve work methods (Kaynak, 2003; Locke and Jain, 1995; Macdonald, 1995) and by providing them with multiple skills to make better decisions concerning how to cope with irregular and emergent events (Morita, 2005). It also includes using information collected from production and/or operational processes and employee feedback systems to support continuous process improvement and performance (Ahire et al., 1996).

On this account, supportive structures of organizational learning are deemed a prerequisite for continuous process improvement (Morita, 2005; Powell, 1995; Savolainen and Haikonen, 2007). Since continuous process improvement is never meant to stop and is not self-sustaining, it requires to be constantly nurtured through management involvement and employee empowerment (Ward, 1994).

The purpose of the above section is to define, discuss and establish conceptual distinctions and relations between learning and improvement processes and practices in organizational settings. A particular outcome of this section was to understand the intimate connection between organizational learning and process improvement, two key variables of the conceptual framework for use in the data collection, findings and analysis phases of this

study focusing on 3PL firms' factual capability in improving work processes and practices (see Table 3).

## 2.4 Organizational learning and process improvement in supply chain environments

Literature linking organizational learning and process improvement to supply chain scenarios is presented in this section. Process improvement implementation barriers within and across organizations are also examined. Themes emerging from the literature review linking organizational learning and supply chain management and process improvement implementation challenges are collated in tables 2 and 3.

### 2.4.1 Organizational learning and process improvement in supply chain scenarios

Evidence clearly points to organizational learning as an important factor for the successful implementation of supply chain management practices (Oelze et al., 2016; Hult et al., 2003). By leveraging resources and sharing capabilities through inter-firm collaborative relations (Narus and Anderson, 1996), firms are capable of reaching goals which would be otherwise difficult to achieve by individual organizations alone (Cheng, 2011), including the development of difficult-to-imitate cross-organizational competencies (Jin and Hong, 2007).

A wealth of authors recognize the barriers involving the achievement of organizational learning goals by a single firm (see point 2.2.3). All the more challenging is extrapolating these organizational learning practices to network partners marked with idiosyncratic strategies, processes and corporate cultures (Fawcett and Magna, 2004). Hence, in practical terms, learning between firms in a supply chain occurs at different levels of engagement and through specific collaborative undertakings. Inter-firm learning arrangements are consequently case-by-case sensitive and can range from being merely a reaction to stimuli (e.g. the direct response of a 3PL provider to a client request), to a higher stage of learning commitment within and across organizations more closely related to the definition of organizational learning involving widespread and sustainable efforts in improving communication, sharing information, aligning goals and processes, and changing behavioural routines to set the context for incremental and radical innovation to take place (Bessant and Caffyn, 2007; Flint et al., 2005).

Themes linking organizational learning and supply chain management are summarized below:

*Table 2 – Themes linking OL and SCM*

Theme	Author(s)
Trust and commitment-based relationship building	Ellinger, 2000; Horvath, 2001; Malhotra and Murnighan, 2002; Spekman et al., 2002; McCormack et al., 2003; Sahay, 2003; Inkpen and Currall, 2004; Kwon and Suh, 2004; Fawcett et al., 2008b; Wallenburg et al., 2011; Fawcett et al., 2012; Abdullah and Musa, 2014.
Knowledge and/or information sharing	Kanter, 1994; Ellinger, 2000; Horvath, 2001; Frankel et al., 2002; Spekman et al., 2002; Hyland et al., 2003; Barrat, 2004; Kwon and Suh, 2004; Power, 2005; Trkman et al., 2007; Veena et al., 2010; Peters et al., 2010; Cheng, 2011; Fawcett et al., 2012; Kumar and Pugazhendhi, 2012; Argote, 2013; Abdullah and Musa, 2014.
Sharing of risks and rewards	Narus and Anderson, 1996; Sahay and Maini, 2002; Spekman et al., 2002; Fawcett et al., 2008b; Fawcett et al., 2012; Kumar and Pugazhendhi, 2012.
Strategic alignment	Kanter, 1994; Frankel et al., 2002; Sahay and Maini, 2002; Cagliano et al., 2005; Fawcett et al., 2008b; Emery, 2009; Fawcett et al., 2012
Top management support	Stank et al., 2001; Frankel et al., 2002; Sahay and Maini, 2002; Fawcett and Magnan, 2004; Fawcett et al., 2008b; Emery, 2009; Fawcett et al., 2012.
Performance measures	Garvin, 1993; Spekman et al., 2002; Barrat, 2004; Yang et al., 2004; Fawcett et al., 2008b; Fawcett et al., 2012
Joint decision-making	Spekman et al., 2002; Simatupang and Sridharan, 2002a; Veena et al., 2010; Fawcett et al., 2012.
Cross-functional and inter-firm integration	Stank et al., 2001; Frankel et al., 2002; Bessant et al., 2003; Chen and Paulraj, 2004b; Barrat, 2004; Fawcett and Magnan, 2004; Power, 2005; Emery, 2009; Peters et al., 2010; Zhao et al., 2011; Lambert, 2014.
Supply chain learning mechanisms	Spekman et al., 2002; Bessant et al., 2003; Hult et al., 2003; Cagliano et al., 2005; Flint et al., 2005; Preiss and Murray, 2005; Oelze et al., 2016.
Organizational culture and change management mechanisms	Spekman et al., 2002; Barrat, 2004; Preiss and Murray, 2005; Wallenburg et al., 2011; Cummings and Worley, 2013.

The literature review connecting organizational learning to supply chain management reveals multiple themes. Key elements that stand out from the review are a) the role of collaboration in enhancing inter-organizational learning; b) the three-fold connection between relational variables, learning and performance; and c) the challenges involving the integration of corporate cultures and structures at the inter-organizational level.

Several authors point to the role of collaborative efforts in the building of knowledge creation and learning environments as essential prerequisites for improving the overall effectiveness of supply chains (Spekman et al., 2002; Bessant et al., 2003; Fawcett and Magnan, 2004; Cagliano et al., 2005; Peters et al., 2010; Fawcett et al., 2012). When companies are successful in building collaborative supply chain cultures supportive of learning and innovation practices, any learning which takes place within the members is more likely to be shared across the entire network (Spekman et al., 2002; Cagliano et al., 2005; Fawcett et al., 2012;). And when the entire supply chain engages in continuous learning, and not the leading players alone, a supply chain network will tend to benefit from greater competitive performance (Bessant et al., 2003).

Still, there is wide consensus that 'learning to collaborate' (Kanter, 1994, pg. 105) is not an easy task as implementing collaboration across multiple organizations is faced by an array of challenges, including the following: a) inadequate information sharing (Barrat, 2004; Fawcett et al., 2008b; Kumar and Pugazhendhi, 2012; Frankel et al., 2002) and information security issues (Kumar and Pugazhendhi, 2012); b) disparity in technological capability among partners (Kumar and Pugazhendhi, 2012); c) turf wars (Barrat, 2004; Fawcett et al., 2008b); d) shortfall of management support, non-aligned strategic and operating policies (Sahay and Maini, 2002; Frankel et al., 2002; Fawcett et al., 2008b; Fawcett et al., 2012); e) lack of trust among decision makers (Sahay and Maini, 2002; Fawcett et al., 2008b; Kumar and Pugazhendhi, 2012); f) inadequate selection of a collaborative and committed learning network (Cagliano et al., 2005); g) unwillingness to share risks and rewards (Sahay and Maini, 2002; Fawcett et al., 2008b; Kumar and Pugazhendhi, 2012); h) overreliance on technology (Frankel et al., 2002); i) inconsistent performance measures, inflexible organizational systems and processes, inadequate training for new mindsets and skills,

resistance to change (Fawcett et al., 2008b); j) misaligned incentives and power-based negotiations (Fawcett et al., 2012); and k) different corporate and national cultures that may approach learning differently (Peters et al., 2010) and may oppose changes (Ellinger et al., 2002; Wallenburg et al., 2011). In sum, despite supply chain collaboration being widely acknowledged, seamless co-ordination is rarely achieved in practice (Trkman et al., 2007).

Relational variables such as trust, commitment, and communication are therefore deemed pivotal to the shaping of well-integrated value streams (Spekman et al., 2002; McCormack et al., 2003, Kwon and Suh, 2004; Fawcett et al., 2012; Abdullah and Musa, 2014). Both trust and commitment, defined by Spekman et al. (2002, pg. 44) as “confidence in others’ intentions and motivations” and “willingness to devote time, energy, and/or resources”, respectively, are perceived by scholars to be essential relational components for network members to invest in collaborative learning leading to improved performance.

Trust and commitment-building capabilities are reinforced across supply chain alliances when: a) risks and rewards are perceived to be shared fairly (Narus and Anderson, 1996; Fawcett et al., 2008b); b) critical decisions at planning and execution levels are coordinated and considerate towards network partners (Simatupang and Sridharan, 2002a; Veena et al., 2010; Fawcett et al., 2012); c) information relevant to improving supply chain integration and decision-making capabilities is shared (Frankel et al., 2002; Barrat, 2004; Kwon and Suh, 2004); d) time is committed to developing inter-firm relationships (Spekman et al., 2002); e) negotiations are not predominantly power-based (Fawcett et al., 2012); and f) investments in network partner’s skills and capabilities are made (Fawcett et al., 2008b).

Communication is also deemed a crucial relational variable in abridging corporate differences and enhancing inter-firm learning capabilities as variations in authority, decision-making styles, reporting mechanisms, and functional roles demand extra alignment and intercommunication efforts (Kanter, 1994). Frequent and quality communication is viewed as lying at the heart of information sharing and, thereby, a *sine qua non* condition for intra- and inter-firm learning (Spekman et al., 2002). But, network partners are also challenged

with enhancing the ability of learning from each other while protecting their technologies and know-how from unintended flow out (Spekman et al., 2002).

Trust, commitment, and communication are thereby considered vital elements to build collaborative supply chains. Even so, it is also recognized that difficult systemic changes are also required at the cultural and structural levels (Sabath and Fontanella, 2002; Fawcett and Magnan; 2004; Emery, 2009; Zhao et al., 2011; Laudon and Laudon, 2014). Sabath and Fontanella (2002) expose the overall complexity of the problem by asserting that each company has unique priorities, capabilities, issues, and management styles which are subject to change in response to an array of internal and external factors. Fawcett and Magnan (2004, p. 68) argue that managing processes at inter-functional and inter-organizational levels demands “dramatic and often painful changes in both thinking and behaviour”, since companies find it intrinsically hard to work synergistically with other organizations on account of their distinctive, and sometimes conflicting, structures, goals, processes, and corporate cultures. Leaders need also to worry about new and more complex corporate cultures and subcultures across organizational boundaries, changing leadership roles as expertise and decision-making is being pushed down in organizations (Laudon and Laudon, 2014), and how efficiently the collaboration message is being accepted and put into effect by middle managers and operational staff within the corporation and across the value chain.

Barrat (2004) argues that cross-functional integration is inherently determined in a negative manner by the nature of delegation in corporations. The author states that “managers and employees often delegate or have delegated to them tasks or responsibilities, which involve activities which are impacted by other departments in the organization over which they have no control or influence” (p. 31). This results in corporate cultures having a hard time to support a collaborative culture internally, let alone across multiple partners, especially since organizational structures and performance measures are prevalently aligned to functional activities, rather than supply chain processes. In this context, performance will suffer unless coordination and integration can take place through personal relationships that managers and employees have built up informally over time across the organization (Barrat, 2004).



In order for members of a supply chain network to develop a culture of collaboration and improve performance, firms need to first better understand their own internal processes so that cross-functional collaboration and learning practices may be enhanced (Stank et al., 2001; Zhao et al., 2011). Firms must also take the time to understand the business and operations of the collaborative parties in order to improve the quality of interaction (Frankel et al., 2002) and evaluate the impact of their partners' *modus operandi* on their internal processes (Barrat, 2004). Cross-company coordination and integrative efforts may even result in companies collaborating better with suppliers and/or customers than with other functional areas within the firm (Stank et al., 2001) as external collaboration can be seen as a fresh, internal dispute-free opportunity, far from entrenched "silo" mind-sets (Barrat, 2004).

Process alignment undertakings across business units, departments, and organizations demand strong management support to unite efforts and achieve collective goals through synergy (Stank et al., 2001; Frankel et al., 2002) and deal with functional friction (Barratt and Green, 2001). Several authors suggest that performance measures can help keep better track of the implementation of organizational and cross-organizational goals and understand where improvements need to be made (Garvin, 1993; Spekman et al., 2002; Barrat, 2004; Emery, 2009; Fawcett et al., 2012). But firms must also ensure performance measures don't encourage turf protection as this may have a negative impact on the long-term collaborative efforts (Fawcett et al., 2008b).

Supply chain literature specifically focusing on 3PL providers connect organizational learning (in particular through the sharing of information and knowledge) to the improvement of service quality with their clients (Flint et al., 2005; Panayides, 2007; Ruiz-Torres et al., 2018). To attain this end, Panayides (2007) suggests that a) commitment to learning needs to come top-down; b) intra-organizational knowledge sharing should be facilitated through appropriate mechanisms; and c) a culture of shared values and open-mindedness implanted. The author expands on organizational learning enablers in 3PL contexts:

*Organizational learning is also manifested by the culture that exists within the organization. A culture whereby people can openly express their opinions through mechanisms that facilitate the discussion of mistakes, providing honest feedback and encouraging employees to ask why will assist in individual learning behaviours that promote organizational learning. Employee training and development is also essential to acquire knowledge and promote the capacity to learn at individual and organizational level, hence employees should be sent to special training programs, seminars and conferences as part of the investment in developing the capability of organizational learning. Organizational learning is also manifested through safeguarding accurate feedback on processes and procedures, an on-going dialogue and inquiry within and between departments about past mistakes and establishing rewards for learning and improvement (p. 146).*

Beyond the general umbrella of organizational learning, limited literature is available on process improvement in 3PL service providers specializing in warehouse services serving as distribution points for retail stores, as is the case in this study. Related in some respects, several authors have focused more particularly on the topic of innovation management of logistics service providers (Flint et al., 2005; Wagner, 2008; Busse and Wallenburg, 2011). This stream of investigation, deemed at an early stage of research (Busse and Wallenburg, 2011), is mostly based on data collected from managerial staff and focuses on two distinct forms of innovation – product/ service and process.

Although the concept of *process innovation* is, strictly speaking, generally associated with performing a work activity in a radically new way and *process improvement* with an incremental change of existing processes (Davenport, 1993), Wallenburg (2009) suggests that *innovations* within ongoing 3PL-customer relationships may also be referred to as *improvements*, “as they are made to an existing service” (p. 77). In line with this, Wagner (2008) makes the following distinction:

*A process innovation is, on the one hand, the implementation of new or improved techniques, methods and procedures with the goal to continually improve the quality of a service or reduce the cost of providing a service. These can include a reduction in the margin of error or in the number of*

*goods damaged during the delivery of freight just as well as the improvement of internal efficiency (e.g. through better utilization of transportation networks). In contrast to these rather incremental process innovations, more comprehensive changes can exhibit an innovative character: the change in the organizational structure (e.g., from decentralization to centralization), advancements in the human resources area (e.g., programs for hiring educated and experienced employees or conducting dedicated training programs), the introduction of a new management system (e.g., balanced scorecard or TQM) as well as the implementation of new IT systems (e.g., an electronic track and trace system) (p. 222).*

Research focusing on these two different forms of innovation gives special attention to customer-driven improvements. Flint et al. (2005) point to a trend of proactive 3PL engagement with customers to identify unmet needs that can be resolved through innovation. In contrast, other authors suggest that logistics service providers more often respond with reactive improvements to customer requests (Sauvage, 2003; Deepen et al., 2008; and Wallenburg, 2009). Information and communications technology (ICT) was found to maintain 3PL's competitive capability as it enables higher levels of supply chain integration (Evangelista and Sweeney, 2006). Deepen et al. (2008) point out that three relationship engagement factors – communication, cooperation, and proactive improvement – influence the perception of logistics outsourcing performance achieved by 3PL service providers.

#### 2.4.2 The process improvement implementation challenge

Repenning and Sterman (2001) assert that the ability of most managers to identify and learn about new improvement methods and techniques is no longer an obstacle. Yet, beyond the discussion of the value of an improvement program, the real challenge lies in an organization's ability to successfully incorporate these methods and techniques in their everyday routines (Argyris, 1994; Garvin, 1993; Repenning and Sterman, 2001).

Rather than in the choice of a specific improvement tool, Repenning and Sterman (2001) suggest that the root of the problem is in the physical, economic, social and psychological

structures in which the implementation process takes place. “It is a systemic problem”, the authors argue, “one that is created by the interaction of tools, equipment, workers, and managers” (p. 66).

These systemic challenges can be even more critical in supply chain scenarios where the strategic management of the flow of goods and services demands efficient and time-sensitive integrative activities between people and organizations with distinctive – and often conflicting – structures, goals, processes, and cultures (Fawcett and Magnan, 2004; Fawcett et al., 2008), resulting in unique and changing priorities, capabilities, issues, and management styles (Sabath and Fontanella, 2002).

Common themes emerging from a literature review on variables that can determine an organization’s process improvement implementation challenges include:

*Table 3 – Process improvement implementation challenges in organizations*

Theme	Author(s)
Top down support	Beer and Eisenstat, 2000; Mutafelija and Stromberg, 2003; Lok et al., 2005; Madison, 2005; Panayides, 2007; Savolainen and Haikonen, 2007; Wong et al., 2012
Alignment with corporate strategy and goals	Bessant and Francis, 1999; Hyland et al., 2003; Lok et al., 2005.
Measurement, rewards and empowerment	Hall et al., 1993; Lambert et al., 2005; Savolainen and Haikonen, 2007; Emery, 2009; Safari, 2016.
Cross-functional challenges	Madison, 2005; Trkman et al., 2007; Emery, 2009.
Change management	Mutafelija and Stromberg, 2003; Rich and Bateman, 2003; Cater-Steel et al., 2006; Busse and Wallenburg, 2011; Chakravorty and Hales, 2017
Information and knowledge sharing	Horvath, 2001; Hyland, 2003; Sauvage, 2003; Flint et al., 2005; Panayides, 2007; Savolainen and Haikonen, 2007; Trkman et al., 2007; Wong et al., 2012; Ruiz-Torres et al., 2018.

A common theme that emerges from the literature on process improvement challenges in organizations is the role of management commitment in getting process improvement

initiatives off the ground (Mutafelija and Stromberg, 2003; Lok et al., 2005; Savolainen and Haikonen, 2007). This top-down support needs to be real, not merely apparent (Madison, 2005). Management also needs to ensure that improvement efforts are properly aligned with a firm's strategy and goals (Bessant and Francis, 1999; Lok et al., 2005).

Research also presents cross-functional integration as critical to the achievement of expected operational improvement results (Emery, 2009). Insufficient attention to it can lay a breeding ground for inter-departmental turf battles in which managers resist losing people and/or taking on new work (Madison, 2005). Other barriers include deficient process testing and training (Page, 2015), process measurement and monitoring (Hall et al., 1993; Bessant and Francis, 1999), and insufficient staff and budget (Mutafelija and Stromberg, 2003).

Many scholars point to change management as the single most challenging barrier to process improvement implementation. According to Mutafelija and Stromberg (2003), "a process may be inefficient and error-prone, but changing that process means abandoning the comfort and certainty of 'the way we've always done business'" (p. 14). Stakeholder involvement (Madison, 2005), employee empowerment (Lok et al., 2005; Safari, 2016), and rewards and recognition for contributions (Bessant and Francis, 1999; Emery, 2009) are proposed as mechanisms to increase employee engagement in improvement undertakings. From a change management execution perspective, the lack of specific processes to drive a change of culture is considered to be an inhibitor of sustainable process improvement initiatives (Rich and Bateman, 2003). This is particularly relevant in a context where companies are increasingly concerned about the sustainability of the improvement programs they are embracing (Chakravorty and Hales, 2017).

In supply chain contexts, trust is looked upon as critical for members of a network to engage in process improvement investments beyond their boundaries (Trkman et al., 2007). And commitment can quickly lose momentum if these undertakings are not perceived to be advantageous to all the parties involved (Lambert and Schwieterman, 2012). Information and knowledge sharing is believed to help build the necessary collaborative environment for

operational improvements to take place (Horvath, 2001; Savolainen and Haikonen, 2007; Trkman et al., 2007; Wong et al., 2012).

Scarce literature is available on process improvement implementation challenges in 3PL firms. Carter et al. (2005) suggest that training plays an important role in empowering 3PL employees to actively engage in integration and improvement initiatives. Lai et al. (2005) see limitations in financial resources and implementation expertise as barriers to implement technology-based process improvement initiatives, considered essential to integrate logistics activities. Lastly, Flint et al. (2005) found the very improvement implementation agendas pushed by customers to be an obstacle to identifying improvement opportunities that can better serve these customer's changing needs.

## 2.5 Gaps in the literature

In the previous section, several themes emerged from the literature review relative to learning and process improvement challenges in supply chain contexts (see tables 2 and 3). An initial analysis revealed that some themes appear to serve as significant enablers or inhibitors to improvement efforts. In particular, these are “top down support”, “information and knowledge sharing”, “cross-functional challenges”, and “sharing of risks and rewards”. Other themes such as “alignment with corporate strategy and goals” and “joint decision-making” seem to play a less important role in putting these initiatives into effect.

Despite the considerable amount of published material available within a broader supply chain scope, some challenges still appear not to have been adequately covered. For instance, scarce literature examines the role of operational and cost pressures (internal and external) faced by firms part of a supply chain network relative to the impact these strains may have on critical learning and improvement initiatives within and beyond their organizational boundaries. There is also poor understanding of the role of performance metrics in encouraging or dissuading learning and improvement activities and insufficient attention to success measurement for process improvement activities in the different phases involved – identification, planning, execution, monitoring and streamlining. And, lastly, not

much is known about the impact on bottom-line performance when these improvements are expected and driven by clients in a position of power.

When the review is narrowed down to the 3PL sector, those gaps are even wider for two central reasons. Firstly, the overall absence of an adequate body of research on learning and process improvement in the application industry of outsourced logistics services. Secondly, the lack of published material using an organizational perspective approach. This lens is useful in allowing to conceptualize and unveil the complex and interdependent forces that can operate in favor of or against the realization of learning and improvement initiatives. Both issues are further described in the points that follow.

#### 2.5.1 The context of application

Once Toyota's lean production model was first made popular outside of Japan by Womack et al. (1990) in "The Machine that Changed the World", process efficiency became widely adopted by competing car manufacturers (Singh and Singh, 2015). In this context, early literature was largely geared towards process improvement methodologies and techniques in the automotive (Berggren, 1993; Oliver et al., 1994; Stewart and Garrahan, 1995; Engström et al., 1996) and electronic (Lamming, 1993; Daniel and Reitsperger, 1994; Nishiguchi, 1994) industries.

As other manufacturing sectors bought into this trend in the 1990's, literature also followed suit and broadened research into new areas. This was particularly evident within process industry-specific sectors under pressure to reduce costs and improve quality in their own unique contexts. For instance, while the chemical sector sought improvements in process control and instrumentation, process design, and maintenance programs (Alzamora et al., 2000), the pharmaceutical industry was being pushed to deliver new, safe, effective drugs quicker than ever before (Melton, 2005), and ETO (Engineer to order) firms were driven to improve the integration of the design, manufacturing and procurement functions (Cameron and Braiden, 2004).

In the last 15 to 20 years, publications on process improvement extended to a wide range of application industries beyond manufacturing, covering areas as varied as healthcare, higher education, information technology, and aerospace. During this time, some research attention was directed to the field of 3PL firms, although mostly treating these logistics service providers as a broad group (Flint et al., 2005; Lai et al., 2005; Deepen et al., 2008; Busse and Wallenburg, 2011), rather than focusing on the particularities of distinct logistics activities, such as observed in firms specializing in transportation, warehousing, inventory management, or freight-forwarding (an exception was found on Wagner's (2008) work on innovation management in the German transportation industry). This indicates a clear research gap on the topic of process improvement design, planning, implementation, and monitoring in 3PL firms specializing in warehouse services serving as distribution points for retail stores which this study aims to address.

### 2.5.2 The organizational context

Despite the wide-ranging spectrum of research described in section 2.4, little attention has been given to challenges in learning and improvement of processes from a broader organizational perspective. Investigating the organizational context implies that the researcher should be able to take a comprehensive view on relations such as: a) how different functions, roles, processes, and routines interrelate; and b) how strategic and tactical decision-making impact these dynamic relations.

An organizational perspective is valuable in that it can help in identifying and analysing the contextual variables (e.g. operational challenges, resource allocation, cross-functional communication, and customer service orientation) that facilitate or hinder the development of learning and improvement initiatives in dynamic 3PL environments. In doing so, it allows the researcher to look at the problems from a contextual viewpoint, rather than from a reduced or cloistered lens that often fails to address the inherently interconnected and interdependent forces found in the real world of complex supply chains involving different organizations.



Focusing on the organizational context also allows to examine the reality of a firm across multiple levels of hierarchies and roles. While the management angle has been thoroughly studied in supply chain/ 3PL literature, mid-range and support-level staff remain largely excluded from research, missing important contributions on concrete everyday operational and workplace matters. Their voices are a powerful and hugely valuable tool to contrast with managers' perception of reality, helping reveal motivations, contradictions, biases, and power dynamics. This inclusiveness therefore allows new considerations to surface and findings from previous research to be challenged and revisited.

## 2.6 The study of complex systems

The purpose of the current study is to investigate the dynamic effects of competing demands faced by 3PL providers immersed in complex and fast-paced supply chain environments. More specifically, it aims at examining the disruptive effects of daily short-term decision-making pressures, mostly operational and profit-based, on strategic learning and process improvement professed by 3PL firms to be essential to securing their long-term competitiveness.

The complexity management required of 3PL providers has accelerated in past years. For instance, complexity can arise as a result of increased non-standard service options or customized solutions in ordering patterns such as frequency of orders, size of orders, and delivery requirements (Christopher, 2011). This is mainly due to the need for data, products, services, processes, and technologies to be exchanged between suppliers, requiring 3PLs and clients to be increasingly interconnected and interdependent. In consequence, the management of dynamic and complex systems has become a considerable challenge in supply chain management (Crandall et al., 2015; Blecker et al., 2005).

According to Schragenheim (1999), 'complex' means that the outcomes of a given action across the organization is difficult to predict. Since there are a significant number of interactions between people and departments, cause and effect relationships cannot be easily identified (Locke and Jain, 1995; Senge, 1990a; Schragenheim, 1999). Senge (1990b) explains that a dynamic complexity scenario emerges when "cause and effect are

distant in time and space, and when the consequences over time of interventions are subtle and not obvious to many participants in the system” (p. 15). Under these conditions, innumerable decisions must be routinely made and regularly revisited by managers who often lack the necessary resources and professional skills to understand and deal with the overwhelming complexity of tasks and move beyond putting out fires (Fawcett et al., 2008b; Locke and Jain, 1995; Repenning and Sterman, 2001).

Since organizations are like giant networks of interconnected nodes, changes that aim to improve performance in one part of the organization can negatively affect other parts of the organization and, thereby, become counterproductive to the system as a whole (Stata, 1989). This is consistent with Kruger (2015) who observes that the complexity of a system is seldom taken into account when efforts are allocated to improving processes.

It has been suggested that this inability of understanding and managing complex systems generally leads to decision-making seeking short-term benefits without consideration for the long-term consequences (Stata, 1989; Senge 1990a; Sterman, 2001; Repenning, 2001; Kruger, 2015). Sterman (2001) attributes this to our “limited, internally inconsistent, and unreliable” (p. 10) mental models that interfere with our appreciation of complexity and lead us to make deficient, short-term oriented decisions. Fawcett et al. (2008b) add that managers seldom possess the knowledge to distinguish necessary from counterproductive complexity, resulting in losing confidence in where to begin, being overwhelmed by the complexity of the tasks, and lacking the necessary resources to move forward.

### 2.6.1 A system lens on complexity

Considering the proposed study is set in the context of supply chain-intensive 3PL environments, inherently conditioned by multiple, constantly changing factors, system dynamics presents itself as a suitable approach to understand the underlying structures in such complex scenarios that have an impact on organizational learning/ process improvement initiatives (see Table 2 and 3). System dynamics places an emphasis on identifying the various components of a given system and, more importantly, how these components interact in a complex and dynamic manner in time (Sterman, 2000). As such,

the system dynamics perspective is a good fit to examine the complex cause-effect interactions related to the problem being investigated in this study in light of the behaviour of the system as a whole.

Building on Forrester's (1961) system dynamics theoretical platform, Peter Senge (1990a) coined the term 'systems thinking' with the explicit intent of transforming firms into learning organizations. By embracing a shift of mind, system thinkers seek to see and understand 'whole patterns' – that is, the broad picture of complex interconnected systems, rather than a fragmented collection of isolated parts. Consequently, Senge's systems thinking perspective points to viewing people in an organization as active participants in shaping their present and future, instead of being mere static reactors (Senge, 1990a).

Rather than focusing on day-to-day events, Senge (1990b) proposes that system thinkers should emphasize the underlying trends and forces of change. Failing to understand the systemic source of problems results in people pushing on symptoms rather than eliminating underlying causes (Senge, 1990a). According to Howard et al. (2007, p. 453), "exploring problems using systemic models helps to think about the real world, promotes discussion and debate, surfaces hidden assumptions, and questions deep-rooted beliefs."

### 2.6.2 Influence diagrams (ID) as qualitative analysis tools

The system dynamics methodology employs IDs to illustrate positive (reinforcing) or negative (balancing) feedback mechanisms in systems (Senge, 1990; Sterman, 2001). An ID is a diagrammatic representation that expresses the causal relationships between a set of variables (Powell and Coyle, 2005), with the intent of summarizing the way in which these variables affect one another within a dynamic system (Howard et al., 2007). As such, IDs are effective tools to analyze the larger picture, visualizing the effects of dynamic interactions among actors, departments on the system as a whole. Sterman (2000) sees causal loop diagrams as the only practical way of testing our mental models which are "dynamically deficient" by nature as they omit feedbacks, time delays, accumulations, and nonlinearities.

Powell and Swart (2005) assert that while IDs have traditionally been employed to map

causal links between the components of a system and software applications used to create simulations that explore the dynamic behaviour of variables that can be expressed numerically, such as 'revenue' and 'fuel flow', this technique is not appropriate to work with qualitative variables, such as 'reputation' or 'customer service', which are more difficult to represent in numerical terms. This gave rise to a series of qualitative system dynamics diagrammatic techniques, including QPID – Qualitative politicised influence diagrams.

The main contribution of the QPID tool is that it attaches human actor symbols to the causal arrows of an ID to track which persons or groups have influence over the strength of the connection of the arrows in the loop (Power and Swart, 2006; Howard et al., 2007). According to Howard et al. (2007), the strength of QPID lies in its ability to enable investigators to view complex and multidimensional problems and capture the political elements from actors in a business situation.

### 2.6.3 Agency theory: complementing the systems perspective

As mentioned in point 2.5.1, by using a systems perspective, numerous complex cause-effect interactions related to the problem being investigated in this study can be identified and analyzed in light of the behaviour of the system as a whole. However, system dynamics is limited in providing a suitable framework to understand the human factors determining the relationship dynamics in a given system. In line with this, Powell and Coyle (2005) assert that system attributes such as power, leverage, influence and control, part of a large class of agency problems, should play an important role/ not be left out the system definition. Consequently, this investigation uses agency theory as a complementary perspective to the theoretical framework provided by system dynamics.

Agency theory addresses conflicts that can arise between the principal and the agent (Eisenhardt, 1989a). Both parties are engaged in cooperative behaviour but are assumed to be motivated by self-interest and have differing goals and risk attitudes (Bergen et al., 1992; Eisenhardt, 1989a; Jensen and Meckling, 1976; Norrman, 2008). In such a context, Eisenhardt (1989a) points out that information may be hidden, thereby creating information asymmetry which may result in 'moral hazard': a lack of effort on the part of the agent difficult

to identify. Information asymmetry may also lead to 'adverse selection': skills and abilities that an agent may claim to have when he or she is hired and which are difficult to verify by the principal.

Bergen et al. (1992) argue that "self-interest often makes the agent reluctant to share the information with the principal or may even motivate the agent to send the principal false information" (p. 3). Tate et al. (2010,) stress that there is often a divergence between the type of information each Principal is interested in and how they will use it, especially when firms have "strong functional organizations with very specific goals that functional members identify with" (p. 807).

A second problem occurs when it is difficult or expensive for the principal to verify whether the agent has behaved appropriately (Eisenhardt, 1989a). To counter this, the principal can offer incentives to the agent and incur in monitoring costs to limit divergences from his interest (Jensen and Meckling, 1976). Thus, the principal needs to manage agency costs associated with specifying, rewarding and monitoring, and policing the agent's behaviour. The agent, in turn, aims to improve rewards and diminish the principal's control (Fleisher, 1991).

Stock (1997) highlights the convenience of using the agency theory in the supply chain management field, based on how it can contribute to define and understand the dynamic nature of multiple principals and agents. The author observes that this framework can also shed light on other supply chain management issues such as risk-sharing, capital outlays, power and conflict between channel intermediaries and the costs and benefits of supply chain integration. Zu and Kaynak (2012) explore agency-based factors (information asymmetry, goal conflict, risk aversion of suppliers, length of relationship, and task characteristics) that may determine how firms design and manage their supply chain quality management systems for supply chains.

Research streams applying agency theory to supply chain environments have focused on the following themes:

*Table 4 – Themes applying agency theory to supply chain environments*

<b>Theme</b>	<b>Author(s)</b>
Inter-organizational relationships	Eisenhardt, 1989a; Lassar and Kerr, 1996; Stock, 1997, Logan, 2000; Norrman, 2008; Rossetti and Choi, 2008; Tate et al., 2010.
Supply risk	Zsidisin and Ellram, 2003; Agrell et al., 2004; Zsidisin et al., 2004; Cheng and Kam, 2008; Ritchie et al., 2008.
Collaboration and trust	Beccerra and Gupta, 1999; Hornibrook, 2007; Lee, 2004; Logan, 2000; Morgan et al., 2006; Norrman, 2008.
Incentives and rewards	Kouvelis and Lariviere, 2000; Zsidisin and Ellram, 2003; Hornibrook, 2007; Ketchen and Hult, 2007.
Supply quality	Zsidisin et al., 2004; Zu and Kaynak, 2012.
Contractual issues	Eisenhardt, 1989a; Bergen et al., 1992; Logan, 2000; Melnyk et al., 2004; Ritchie and Brindley, 2007; Norrman, 2008; Tate et al., 2010.

The literature review applying agency theory to supply chain environments reveals two main themes: (1) inter-organizational relationships; and (2) supply chain risk. Other themes are contractual matters, incentive and rewards tools, and trust/collaboration-related issues. These are often used in connection with the main research streams.

Based on the relational nature of principal-agent problems, much emphasis is placed in literature on inter-organizational relationships, with special attention to buyer-supplier (principal-agent) ties (Fayezi et al., 2012). These relationships are marked by distinctive objectives, information and risk attitudes (Norrman, 2008). According to Ketchen and Hult (2006), agency theory offers a natural fit for supply chain management research as supply chains are filled with relations that involve one firm delegating authority to another and conflicts of interest will tend to arise. Considering the dynamic nature of multiple principals and agents in supply chain scenarios, scholars have been paying more attention to triadic and tetradic supply chain relationships, rather than on the dyadic type (Fayezi et al., 2012).

As collaborative settings can range from simple single-principal and single-agent to complex multi-principal and multi-agent scenarios, each carrying distinctive risk components, Cheng and Kam (2008) develop a conceptual framework to analyze different levels of risks in supply networks. The authors use agency theory to analyze how parties respond to risks outside of their control and conclude that “dynamics of risk in network systems depend not only on the typology of networks, but also on the functional role of each collaborator inherent in the network through agreements on supply and incentives, and supply performance” (p. 345). With a focus on supply risk, Zsidisin and Ellram (2003) explore how purchasing firms manage supplier behaviours by using the framework of agency theory. Zsidisin et al. (2004) examine supply risk assessment techniques that help purchasing organizations collect information to evaluate supplier behaviours, aiming to address supplier quality issues, improve supplier processes, and reduce the likelihood of supply disruptions.

Agency theory has also been applied to explore how self-interest and opportunism can be reduced through incentives and rewards to better reach goal alignment along supply chains (Hornibrook, 2007; Ketchen and Hult, 2006; Zsidisin and Ellram, 2003). Based on the assumption that managers respond to their own individual incentives, Kouvelis and Lariviere (2000) use the agency perspective to discuss incentive schemes through an internal market (managers buy output from one function and sell to another) that can help coordinate cross-functional decision-making in decentralized settings to maximize the overall profits of a firm.

As in literature connecting organizational learning to supply chain management (see Table 2), trust also plays a key role in attenuating agency problems in supply chain scenarios. Beccerra and Gupta (1999) observed higher agency costs in time and energy managing low-trust relationships than in high-trust relationships. In continuous improvement scenarios, Lee (2004) uses agency theory to suggest that individuals will tend to limit their contributions to clearly defined roles unless they are sanctioned for not putting in cooperative, voluntary contributions outside those roles. In this context, the author stresses that “identification with the employing organization may be an important condition for trust to have a positive effect on continuous improvement efforts” (p. 627).

Trust also plays an important role in a setting where supply chains need to deal with the risk management of multiple contracts (Norrman, 2008; Ritchie and Brindley, 2007). To provide and support an environment of trust, Logan (2000) proposes using agency theory for “developing the most efficient contract governing the principal-agent relationship assuming self-interested people and corporations” (p. 26). In this line, Norrman (2008) points to well-structured and detailed contracts as a fundamental platform for the “development of cooperative, long-term and trusting relationships” (p. 388). From a result-oriented view, Melnyk et al. (2004) argue that most organizations don’t consider contracts as an appropriate motivating and control mechanism. Instead, the authors point to the development, selection, and use of metrics as a crucial tool for principals to manage and direct the activities of their agents.

Bergen et al. (1992) point to two distinct types of contract-related problems incurred when entering a relationship with an agent: a) pre-contractual problems as problems of ‘hidden information’ before the principal decides on offering an agent a contract (whether they be employees, dealers, suppliers or an advertising agency); and b) post-contractual issues as problems of ‘hidden action’ once the principal and agent engage in a relationship. Tate et al. (2010) emphasize that effective contracts require goal congruence between Principal and Agent.

Although agency theory presents a partial view of the world that cannot alone capture the greater complexity of organizations (Eisenhardt, 1989a), it offers a complementary perspective to the systems-based view. This is done by helping unveil the impact of agency-related issues relevant to the current investigation found in relationships (Stock, 1997), authority delegation and conflict of interests (Ketchen and Hult, 2007), and decision-making motivations, which can all influence and be influenced by the dynamics of complex systems (Lane and Huseman, 2008).

As previously stated, the QPID tool serves as a system dynamics method to map and visualize cause-effect relations between variables, how different sets of variables interact dynamically, and how they influence, positively or negatively, the case study firms’



effectiveness in implementing process improvement initiatives they set out to achieve. In addition, this form of ID can situate agents of actions on causal connections over which they have influence (Howard et al., 2007), thereby also serving as a tool to support a complementary agency-based analysis.

## 2.7 Research questions

This study aims at investigating learning and process improvement implementation challenges faced by 3PL providers in Western Canada operating in fast-moving, time-sensitive, and constantly priority-shifting settings. It also studies areas of disconnect between institutional rhetoric and reality in the commitment to organizational learning and process improvement practices.

A complementary use of systems and agency-based approaches was chosen to explore the multi-dimensional relationship between context, vision, structure, management, culture, and processes in relation to their influence on learning and improvement in complex and fast-paced 3PL environments. Further, the conjoint use of these two lenses serves to assess the applicability of the QPID tool in complex and dynamic 3PL contexts.

Below are the questions this study sets out to answer.

### *The central question*

How do conflicting demands and decision-making faced by 3PL firms in Canada affect the prioritization and effectiveness of learning and improvement initiatives?

The following sub-questions have been framed to assist in answering the central question:

- 1) What are the key operational and financial challenges faced by 3PL firms?
- 2) How does task prioritization impact the firms' efficiency and what motivates it?

- 3) How are process improvement needs identified, designed, implemented and monitored over time and what motivates these initiatives?
- 4) What managerial, cultural, communicational, motivational, performance and client-based barriers stand in the way of process improvement activities?
- 5) How and why do associations of staff at different hierarchical levels determine process improvement activity?
- 6) How and why do interrelations between the 3PLs and their client(s) determine process improvement activity?

## CHAPTER 3: Research methods

The research methodologies and techniques used in this study consist of a multiple case study based on two cases, used in conjunction with system dynamics and agency tools. This section firstly discusses the benefits and reasons behind the adoption of a case study approach combined with a qualitative-interpretive research method. The following sections describe the interviewing process, the execution of QPID workshops, and the data cleaning, coding, and analysis of the results. Then, the manner in which privacy and confidentiality were handled throughout the research process is illustrated. Lastly, the researcher's personal and professional experience and its influence on the study is indicated.

### 3.1 Case-study approach

The present study followed a multiple case-study approach to explore little researched phenomena. Meredith (1998) suggests that the multiple case study is appropriate “when there is some knowledge about the phenomenon but much is still unknown” (p. 452). This methodology allows the preservation of the holistic and meaningful characteristics of real-life situations, such as contemporary organizational and managerial processes (Yin, 2009). According to Neuman (2013), case studies offer the advantage of making more visible intricate details of social processes and cause-effect relations. Further, the resulting evidence can more effectively describe the “complex, multiple-factor events/ situations and processes that occur over time and space” (p. 42).

Yin (2009) points out that the case study method is typically used “when a) the more explanatory “how” or “why” questions are being posed; b) the investigator has little control over events; and c) the focus is on a contemporary phenomenon within a real-life context” (p. 2), as is the case in the proposed investigation. Another component of Yin's case study design is the use of propositions. These statements help reflect on theoretical issues and serve as guide to data gathering and analysis as they direct attention to relevant issues that need to be examined within the scope of the study.

The unit of analysis of this study is two 3PL providers offering warehousing and distribution services in Canada. The selected case study firms were active participants in supply chain sector associations (including CLC and IPI) and industry forums and committees conducted by the Van Horne Institute (VHI), a leading Canadian research institute in transportation, logistics, and distribution. The following criteria was used to select the companies:

- 3PL service providers serving as regional distribution centers.
- Their distinct supply chain position in relation to their client(s).
- Engagement in supply chain sector best practices forums, including discussions on process improvement practices.
- Readiness, willingness and ability to participate in this study.
- Agreement to allow interviews to take place during regular work hours.
- Provision of a meeting room in the distribution center for interviews to take place.

### 3.2 Qualitative-interpretive research method

#### 3.2.1 The research environment

I have adopted an interpretive view in this work where the researcher is brought closer to the meaning given by different actors interacting with their context (Easterby-Smith et al., 1999). This view assumes individuals use social interaction to make sense of reality (Guba and Lincoln, 1994; Neuman, 2013). Since reality is socially constructed (Creswell and Miller, 2000; Crossan, 2003), the role of constructivist investigators is to capture interlocutors' experiences, insights, and points of view. This perspective is in direct contrast with a positivist standpoint whose strong reliance on empirical evidence downplays the need to study unseen, internal motivations of humans (Neuman, 2013).

The positivist philosophy assumes that objective realities exist and hard facts can be studied in much the same way as natural objects and established as scientific laws (Smith, 1998). Hence, statements, hypotheses, and theories are not absolute truths as they are always

subject to being falsified (Popper, 1961). This approach also perceives the investigator and the object of investigation as being independent entities and the investigator capable of examining the object of study “without influencing it or being influenced by it” (Guba and Lincoln, 1994, p. 110). The posterior postpositivist angle also advocates for the existence of a real world driven by natural causes but carries a constructionist/ interpretivist flavour by suggesting humans are incapable of having a perfect understanding of this reality with their flawed sensory and mental capacities (Crossan, 2003; Guba and Lincoln, 1994).

Considering my research aimed at understanding relations between people, firms and organizational processes in complex supply chain contexts, it was relevant to capture how different actors made sense of their workplace reality. This included their perspective on how and why different elements of their complex systems are interconnected, interrelated, and interdependent, as well as their view on power and politically-motivated factors.

Consistent with a qualitative-interpretive approach, my investigation focused on capturing interlocutors’ experiences and perspectives. It also involved interpreting data that was collected from participating interviewees in one-on-one interviews or collective inquiry contexts, working with the social constructionist assumption that the investigator and the object of investigation are “interactively linked so that the ‘findings’ are literally created as the investigation proceeds” (Guba and Lincoln, 1994, p. 111). In other words, the interaction with my interlocutors led to a shared understanding of reality.

### 3.2.2 The interpretive research

Interpretive research can support researchers in achieving a more in-depth understanding of human thought and action in organizational contexts (Klein and Myers, 1999). The qualitative-interpretive angle adopted in this study is one of several lenses that can be used to understand multiple levels of complexity found in supply chain environments.

Different perspectives can each cast a different light to capture the breadth of complex problems (Beers et al., 2006). This is even more pertinent in 3PL settings where functions, processes, technologies, and stakeholders (internal/external) are inherently interconnected

and interdependent. Hence, the qualitative-interpretive perspective is one amongst many approaches that can be employed to unveil complex supply chain contexts.

Merriam (2009) states that researchers using interpretive research techniques would be mainly interested in “(1) how people interpret their experiences, (2) how they construct their worlds, and (3) what meaning they attribute to their experiences” (p. 23). In a qualitative-interpretive study, data collected serves as a basis to explore emerging themes.

In the initial phase of this study, a literature review was conducted to examine the literature and help define the research question/s in the context of process improvement and learning in the 3PL sector. After framing the sub-questions that assist answering the central question, my supervisors and I worked on designing a protocol based on Yin’s (2009) case study design and composed of unstructured and semi-structured questions. Care was taken to ensure the interview questions were different from – and yet congruent with – the research questions. The distinction between research and interview questions is clearly outlined by Maxwell (2012).

*Your research questions formulate what you want to understand; your interview questions are what you ask people to gain that understanding. The development of good interview questions (and observational strategies) requires creativity and insight, rather than a mechanical conversion of the research questions into an interview guide or observation schedule, and depends fundamentally on your understanding of the context of the research (including your participants’ definitions of this) and how the interview questions and observational strategies will actually work in practice (p. 101).*

In essence, the aim was to formulate a protocol where all topics relevant to the study were covered in an inquiry-based conversational manner (Castillo-Montoya, 2016), whilst allowing participants’ unique viewpoints and experiences to emerge. This protocol was subsequently pretested with a small sample of key informants to check validity, consistency, and wording, as well as to refine interviewing skills.

In addition to the face-to-face interviews at different staff levels at the 3PLs, the research also used a soft system methodology (SSM) by organizing QPID workshops in each case-study firm. According to Howard et al. (2007), in such collaborative enquiries researchers act as facilitators and work with practitioners from different functional backgrounds to identify variables that are visually recorded and discussed in a group environment to investigate and co-create a social reality. The resulting ID also identifies important actors and coalitions playing roles in the system.

### 3.3 Contact and consent

Once the protocol was field-tested, the next step was to establish contact with key decision-makers working for 3PL providers, introduce and clarify the research aims and objectives, and solicit the participation of the firm in the research. Two major 3PL firms operating out of the Calgary region, Western Canada's logistics hub, gave consent for interviews to be conducted on their premises. To maintain anonymity and confidentiality, these companies are referred to as "APEX" and "ORION".

### 3.4 Privacy and confidentiality protection

To protect the human subjects that participate in the investigation, Yin (2009) recommends that informed consent should be obtained from all the participants to brief them on the nature of the study and request their volunteering. The author also suggests that their privacy and confidentiality should be maintained anonymously.

All interviews in the present study were conducted under the conditions of ethical research conduct as stipulated by the University of Exeter (UK) Business School. Before the start of the interviews or QPID workshops, interviewees were informed of the nature of the study (Yin, 2009) and given the chance to inquire about its purpose and express any concerns or objections. Interviews were only recorded with permission of the informants who were informed they could ask for the recording to be turned off at any point during the individual or collective inquiry (Thomas et al., 2001). Moreover, they were informed that they could withdraw from the interview at any time or refuse to answer any question during the

interviews and workshops. To further minimize the risk of negative repercussions, participants were informed that they are also entitled to rectify, erase or restrict the processing of any statement they made. They were also given assurance that their privacy and confidentiality was protected and that all data collected on notes and/or recordings will be destroyed after the completion of the study.

Prior to the start, informants were given an information sheet (Appendix I) outlining the nature of the research. Consent was also gained through verbatim and written consent. The consent form (Appendix II) signed by all the interviewees included information on the purpose of this study, the strict confidentiality of the information and insights shared, and their rights during and after the interview. Informal conversations before the start of the interviews were instrumental to build rapport with the interviewees. A copy of the consent form and the information sheet was given for them to keep.

### 3.5 The Interviews

The core interviewing process lasted over a period of three months. During this time, 31 on-site interviews were conducted with current employees at meeting rooms in the two warehouse facilities that ensured privacy. Interview scheduling was both done in conjunction with management at each firm and directly by the interviewer based on interlocutors' convenience. In addition, 8 off-site interviews were carried out with former employees at a supply chain Institute or restaurant setting. Two additional interviews were conducted 10 months after the main interviewing phase. In total, 41 interviews were conducted with former or current employees, 21 with APEX and 20 with ORION, between October 2017 and February 2018. On average, interviews lasted approximately an hour, with a small number limited to 40-50 minutes. Off-site interviews lasted as long as an hour and a half.

Target-interviewees held executive, professional, mid-range and support-level positions. The choice to interview a wider range of individuals was based on the intent to gain insight from personnel with diverse areas of expertise, knowledge, and roles across the firms. This



aimed at gaining a more comprehensive understanding of learning and improvement capabilities in the face of daily challenges and decision-making.

Below is an interviewee break-down by company and role:

*Table 5 – Interviewee break-down by company and role*

Interviewees	Firm	APEX	ORION
<b>Executive level</b>			
Facility manager		–	1
Assistant general manager		1	–
Operations director		1	1
<b>Professional level</b>			
Human resource manager		1	1
Inventory operations manager		1	–
Inventory control manager		1	2
Logistics planning manager		1	–
<b>Mid-range level</b>			
Operational supervisors		2	2
Lead hands		2	2
HACCP supervisor		–	1
<b>Support level</b>			
Inventory control clerk		1	1
Customer service		1	1
Dispatcher		1	2
Receivers/ loaders		3	2
Order selectors		4	3
Forklift operators		1	1
<b>Total</b>		<b>21</b>	<b>20</b>

Following an interpretive line of enquiry, the interview process began with unstructured questions. This initial approach allows the interviewer to understand the world as seen by the respondent (Patton, 1987) and identify relevant themes. Follow-up questions made to probe for more elaborate responses and capture the interlocutors' meaning to any occurrences they have experienced and which they considered important. Semi-structured questions ensured the conversation remained pertinent to the topics surrounding the study's sub-questions and within the scope of a systems and agency approach. Specific examples of process improvement, continuous improvement, and organizational learning were sometimes provided as groundwork for discussions and to explore perceptions of cause-effect relations between these variables and managerial and operational elements (e.g. policies, standards, measures, initiatives, decision-making, and political issues).

The first set of questions focused on work responsibilities and challenges, including daily routines, reporting structure, prioritization decisions, and key operational challenges. The second set was designed to be more probing than the previous one, containing questions revolving around interviewees' and firms' involvement in process improvement initiatives, including context, relevance, and rate of success. The last set of questions was related to key lessons learned from past process improvement activities and the overall effectiveness of the firms in developing employees' skills and capacities and in engaging them in process improvement initiatives.

Considering the target informants are immersed in fast-paced and constantly changing environment, there was a need to remain flexible and adapt to their needs. On some occasions, interviews were conducted in parts, as informants needed to interrupt the interview to address unexpected happenings. Upon request, several interviewees accepted to take me to their work stations to illustrate how and if process improvement initiatives were being implemented in concrete terms, as well as to pinpoint areas for future process improvement development.

In order to build trust and foster an open communication, informants were continually reminded of the private and confidential nature of the interview (see point 3.4). Being

informed that the results would be presented to top management and assured that their anonymity was secured, interviewees were generally willing to provide details of their specific circumstances and express their points of view more freely. In particular, operational staff who felt their voice was mostly ignored seemed to see these interviews as a chance to convey their concerns, suggestions, and frustrations to management through what they perceived to be an independent and neutral third-party channel.

In keeping with Eisenhardt's (1989b) suggestion, during and immediately after the interviews, field notes were taken on whatever impressions occurred. By doing this, the investigator is 'reacting' rather than sifting out what may seem important and which may result in leaving out interesting insights from the field that may be useful in the future. Eisenhardt (1989b) also recommends to push thinking in the field notes "by asking questions such as 'What am I learning' and 'How does this case differ from the last?'" (p. 539) was also followed.

Following Merriam and Tisdell's (2016) recommendation, data analysis ran concurrently with data collection, allowing adjustments to be made as the research moved forward, to the point of redirecting data collection, and test emerging codes and themes against subsequent data. According to the authors, without simultaneous analysis, data can be "unfocused, repetitious, and overwhelming in the sheer volume of material that needs to be processed" (p. 197).

After the transcription of interviews, inductive coding (Thomas, 2006) was conducted by the researcher to identify key themes. The process started by reading each individual transcription in its entirety to gain a sense of the whole. At times, first impressions and initial considerations were jotted down in pencil. The next step was to create codes (e.g. "financial compensation" or "changing priorities") from units of data. These codes were in some cases used multiple times as the coding of the transcripts progressed. They were thereafter sorted into broader categories whenever relevant (e.g. "workload pressure", "limited career growth", and "deficient coaching" were categorized as "morale loss"). The organization and grouping

of similarly coded data into categories or “families” and the relationships between them allowed the emergence of patterns (Saldaña, 2009).

Using Eisenhardt’s (1989b) case study research model, the next step was to write detail write-ups elaborated for each case study. The purpose of this technique is to shed light on patterns unique to each individual firm before formulating generalizations across cases. Cross-case tactics to examine data and search for common patterns found across the firms were then utilized. According to Eisenhardt (1989b), by using divergent techniques, investigators are forced to go beyond initial impressions and observe evidence through multiple perspectives. As concepts, themes, and relationships between variables began to emerge, conflicting and similar literature was reviewed to polish definitions and improve generalizations.

Follow up discussions were also carried out with interlocutors to tease out issues of relevance to the research study (Matthews et al., 2017). Lastly, the research ‘reached closure’ when the iteration process between key constructs and variables resulted in minimal incremental understanding (Lee, 1999) – that is, similar instances of the phenomena had been observed in a recurrent manner (Glaser and Strauss, 1967; Eisenhardt, 1989b).

Ten months after the conclusion of the core interviewing phase, two additional interviews were conducted with key-informants (one from each firm). These interviewees were professional-level employees with vast firm-specific experience. The main aim here was to collect additional information, evaluate whether data and thematic saturation had been reached (Guest et al., 2006), and refine themes and insights stemming from the analysis of previous interviews. Rather than using the original protocol, questions were mostly unstructured and semi-structured and revolved around the preliminary findings and themes.

### 3.6 QPID Workshops

QPID workshops are a form of *engaged scholarship* between the researcher and the participants of the collective inquiry, aiming at collecting the perspective of multiple stakeholders to help understand complex issues. By exploiting a variety of viewpoints in a

problem, engaged scholarship can produce knowledge that is more penetrating and insightful (Van de Ven, 2007).

QPID collaborative enquiry exercises were organized for each case study firm after the interviewing process at APEX and ORION was completed. The purpose of these workshops was to complement the data gathered during the interviews by gaining a deeper understanding of the more complex issues identified (e.g. conflicting groups, trade-offs, low morale), and how they fit within the various levels of the organization (e.g. shop floor, supervisory, management) and supply chain (e.g. client(s), 3PL firms).

The APEX and ORION workshops were attended by six and five employees, respectively, holding different roles at support, mid-range and executive levels in the organization. Except for one APEX employee, the other ten participants had not been previously been interviewed. Attendees were invited to participate using a database collected on previous research, programs and events they had taken a part of. Two attendees brought a co-worker.

The workshops were conducted at the researcher's home on two separate Saturdays in November and December 2017. Each QPID exercise lasted almost two hours and started after a barbecue was served. A flip chart was set up in the eating area facing the participants. During the course of the lunch, the researcher acted as the facilitator jotting down key variables and relations between variables on the flip chart pages as they surfaced in the conversation. Through an iterative process of engagement and reflection, participants were encouraged to propose and discuss the relevance of linkages and suggest changes wherever necessary. As the exercise progressed and thoughts were being articulated collectively, diagrams of interacting feedback loops were organized in real time on the flip chart and submitted to critical review. The exercise reached closure when consensus was mostly reached on a rich map of relationships and human actors associated to the arrows connecting each variable.

Adapted from Howard et al. (2007), the following guidelines were applied during and after the QPID workshops:

1. Before the start of the workshop, a short presentation was given by the investigator to explain the method. Participants were informed that the expected outcome of the collective exercise was to produce an influence diagram with actors attached to the links.
2. The researcher facilitated an open discussion in the group by asking attendees to a) expand on open-ended topics (e.g. “What kind of pressure is exerted on shop floor staff to meet operational targets?” or “how does top management manage conflict with clients?”); b) connect cause-effect relationships (e.g. “From your experience as a supervisor, how do customer-driven changes in logistics plans affect operational effectiveness?” or “what are the combined effects of workload pressure and deficient coaching on morale and turnover?”); and c) express agreement or disagreement with interrelated variables jotted on the flip chart (e.g. “What is your view regarding the relation established between the lack of financial incentives and rewards and productivity?” or “Do you agree that internal conflicts between customer service and operational staff are rooted in the top-down policy to satisfy clients at any cost? Can you think of other reasons?”).
3. The resulting ID was designed to represent a self-consistent belief on the part of the informants, rather than a joint attempt by researcher and informants to reveal a positivist “truth”.
4. After the workshops, the ID was sent by e-mail to the participating individuals for verification and feedback. The aim was to solicit their insights and views on the system dynamics and different elements of power, influence, and control. Subsequently, a formal presentation was made to top management at APEX and ORION to discuss the results and gather additional feedback.
5. As the QPID technique has an intervention element, the researcher was careful not to act as an arbiter of reality during the workshops and to avoid carrying the notions from one case study firm to another.

In line with the recommended steps by Howard et al. (2007), the workshops were positioned after the preliminary one-on-one interviews conducted to familiarize the researcher to the firm and before conducting significant interventions through QPID. Both the interviews and workshops were transcribed immediately upon conclusion, in preparation for the cleaning stage where missing data, inaccuracies, and inconsistencies were identified. Follow-up phone calls to the interviewees were made to address such issues (Thomas et al., 2001).

### 3.7 The influence of my professional background and experience

The direction of my research project and choice of methods and interviewing tools and practices was influenced by my professional background and experience involving consulting, training, industry report and forum participation/ organization. This was particularly the case in the last 20 years, when it was geared towards global market penetration and supply chain projects as strategic management consultant and founding partner at Crossbridge Inc..

During the abovementioned timeframe, I consulted to clients in a span of countries and industries, including the textile, plastics, paper pulp, petrochemical, and supply chain sectors. Since 2010, my focus has centered around supply chain assessments, research, and training. As a contractor of the Van Horne Institute (VHI), I organized forums, managed supply chain training programs, and produced industry reports on HR practices in the supply chain sector. These reports involved access to and analysis of industry and government databases and reports as well as face-to-face interviews with industry executives in the 3PL (warehousing and transportation) and energy sectors. Lastly, I also played an active role as a member and advisor of the Calgary Logistics Council (CLC) and the Inland Port Initiative (IPI) in the Calgary region, considered Western Canada's distribution hub, conjointly with other industry leaders.

Industry relations built over the years played a role in the selection process of the case study firms. The choice of moving forward with APEX and ORION was made after selecting and meeting with a number of industry leaders in the 3PL segment part of my company's

business network. In these meetings, I introduced the research objectives to these executives and I was able to evaluate the interest and adequacy of their firms for participation in this study.

From the outset, my experience in supply chain assessments influenced the emergence of the thesis's project. Over the course of data collection and analysis for auditing and assessment purposes, I became particularly drawn to firms' dilemma of improving processes in the face of scarce resources and in the seeming disconnect between managers and operational staff in the way they viewed their organizations' learning and improvement capabilities. This preliminary finding also drew attention to the importance of hearing the voice of operational staff for a more complete understanding of this topic.

While drawing on my consulting background, involving the conduction of organization-wide interviews, it was important to recognize the potentially inhibiting factors when interviewing operational staff, such as the fear that their viewpoints could be used against them or their department. For this reason, participants were verbally reiterated throughout the interview that privacy and confidentiality would be strictly observed. This contributed to an open and interactive communication atmosphere with facility workers, lead hands, and supervisors. Arguably, this helped several interviewees showing signs of bottled up feelings and frustrations to be willing to share their stories and reflections. This was particularly the case of supervisors at ORION and warehouse associates at APEX.

During the collective enquiry activities (QPID workshops), my background as a university and training lecturer helped in building positive group dynamics where participants were encouraged to discuss and share ideas in an engaging and naturally unfolding manner. Care was taken not to invite participants belonging to the same team with the intention of fostering an environment where they could voice critical or dissenting views more openly and without fear of retribution.

Lastly, my experience with supply chain assessments was also useful to encourage informants to talk more deeply about issues they considered relevant. Since I was involved



in projects which oftentimes required the identification of cross-functional asymmetries and operational disruptions, I was able to make interviewees feel I could relate to their daily challenges and dilemmas. This seemingly helped them feel more comfortable in going deeper when narrating their own circumstances. Further, my experience in distribution center settings enabled me to use commonly used terminologies (e.g. “zone picking”, “freight consolidation” or “shrinkage”) which helped create a professional discussion environment.

## CHAPTER 4: Findings

This chapter describes the findings that emerged from the data collected in the field. The questions in the interview protocol were formulated to explore how 3PL providers offering distribution center services went about improving their processes in challenging supply chain environments. In particular, probing questions sought to gain an understanding of how process improvement practices were developed, implemented and assessed. The order of questions was therefore built around process improvement activities, starting from interviewees' work responsibilities, daily challenges, and prioritization decisions, and then moving directly to process improvement initiatives and lessons learned.

During the protocol design phase, it was assumed that process improvement (and organizational learning in a broader sense) was prioritized by 3PL firms and that it was challenged by operational and profit-based constraints. This premise was based on discussions revolving around process improvement in supply chain sector forums and industry reports where the improvement of processes is presented as an essential component for securing long-term competitiveness.

However, as the interviews progressed and the sample groups were prompted to talk about process improvement, it became evident the improvement of processes was not at the top of their agenda. Instead, interviewees showed more interest in talking about the context surrounding performance (e.g. depletion of resources, workload, coaching, morale issues, performance baselines) which frequently stemmed from discussions around process improvement.

The findings are thereby presented in a manner that reflects the contextual way the interlocutors talked about process improvement. As such, the body of this chapter is organized around key topics surrounding the 3PL providers' unique (1) business and operational setting; (2) operational, performance measurement, and HR-related challenges; and (3) the impact of prioritization and decision-making across different functions and organizations. These topics together set the stage to understand under what conditions and

how process improvement capabilities are enabled or constrained over time at APEX and ORION. Later in the chapter, different and similar patterns between the two firms are organized in a table to lay the foundation for the subsequent analysis chapter.

#### 4.1 The case-study firms

The firms studied in this research are 3PL providers in Canada offering local distribution center services in fast-moving, time-sensitive, and priority-changing supply chain environments. This study seeks to understand how learning and improvement are developed, implemented and assessed from these service providers' management and operational staff perspective. Data source is anonymized to protect the identity of each participating firm and interviewees.

As 3PL providers specializing in distribution center operations, the case study firms measure performance through KPIs such as unloading and loading rate, damaged goods incidents, accident rates, turnover levels, and customer satisfaction, among other indicators.

#### 4.2 Case 1: APEX Logistics

This case portrays the challenges faced by a 3PL service provider offering warehousing and logistics management services (see Table 1, p. 17) as client-based cost-reduction and operational pressures have an impact on performance and morale. The case also brings to light inter-firm differences between the 3PL and the sole client in the perception of operational needs and SOP/ KPI metrics.

APEX is a subsidiary of a leading market provider of 3PL and supply chain solutions in North America and Europe, offering clients in different industries warehousing, transportation, and logistics solutions and professional services. The group manages operations of four million square meters and has over 5000 employees.

In a unique business arrangement, APEX offers dedicated distribution center management services to a major home improvement retailer supplying a wide assortment of home

material and building products. This client outsources receiving, inventory storage, order processing, and shipping operations to the 3PL to replenish numerous stores throughout Canada (see Figure 1).

APEX is responsible for the management of 350,000 square-meter facilities belonging to the client composed of an inbound building for processing freight arriving from multiple suppliers and an outbound building where goods are loaded on to trucks leaving for designated stores needing replenishment. The figure below illustrates this unique supply chain configuration involving the 3PL and the client.

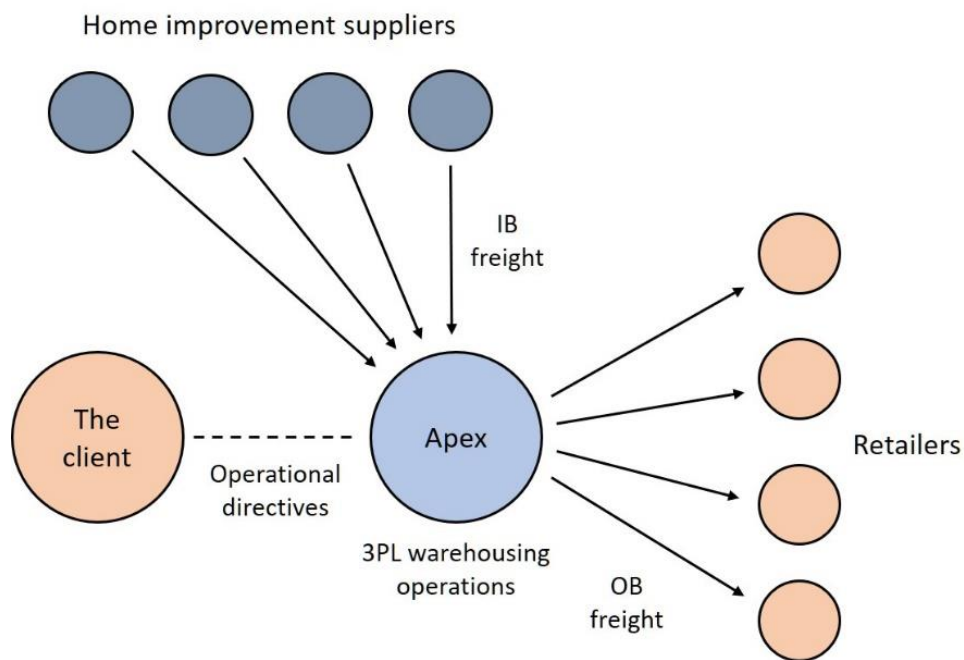


Figure 1 – APEX Supply chain network

The client operates more than 180 stores in Canada, each selling thousands of home improvement products, and employs over 30,000 people. The group combines own and third-party-managed distribution centers. A choice was made to have operations in Western Canada run by a 3PL provider specializing in distribution center services. APEX was chosen among other options of third-party logistics businesses. Their management team operates

from offices located on the premises of the custom-built distribution center belonging to the client.

Unlike other 3PL-client relationships where the outsourced logistics provider serves one or multiple clients and controls their own financial, operational and staffing needs, this distinct business arrangement is based on a single client controlling almost every aspect of the business – from setting performance indicators, to daily priority plans and reporting methods, to the number of staff and their financial compensation. As such, performance management challenges faced by the 3PL are strongly determined by operational and budgetary parameters laid out by the orchestrating client. These parameters are driven by specific store replenishment needs, cost-reduction pressures, and performance measurement baselines (KPIs, REs, and SOPs) and are perceived by APEX management to be continuously being pushed to the limit.

Driven by both the client and APEX, learning and improvement capabilities are affected by a number of factors, including the above-mentioned operational and budgetary determinants with direct impact on performance and employee morale. The process of data analysis and coding yielded several themes relevant to the enabling or inhibition of organizational learning and process improvement undertakings. These themes are now described below.

#### 4.2.1 The impact of cost-reduction on motivation

In a move not commonly seen in the 3PL industry in Canada, the client decided to reduce wages by 6% in earlier months and eliminate benefits such as tuition reimbursement support. These cost-saving decisions were reported by operational supervisors and lead hands to have eroded motivation and raised turnover levels. In addition, the absence of performance-based rewards, a practice gaining support in 3PL settings, results in many employees not seeing a benefit from performing more efficiently. As a pallet builder pointed out: “There is no doubt in my mind that performance would improve if we had some form of financial incentive. Getting a gift card or a parking spot in a lucky draw is a joke.”

To further reduce costs, the client reduced lead hand (LH) positions from six to four, substituting them for shop floor roles. Lead hands play a critical role in supporting supervisors in coordinating tasks of workers and providing much needed coaching. While this decision may have helped abate costs it also forced lead hands to decrease their attention to training and coaching, in order to manage workflow coordination efficiently. An operational supervisor and a lead hand pointed out that by diminishing coaching roles, medium and long-term operational capabilities were affected. It had also a negative effect on workers' morale, as already typically scarce career growth opportunities in warehouse environments are further limited.

Cuts in financial compensation and in coaching roles are thereby perceived as affecting morale, operational effectiveness, and process improvement capabilities. "For the client these are just numbers", a manager bitterly complained, "for us, it is a terrible loss in employee morale which ends up affecting performance and turnover". From the client's standpoint recounted by an HR manager, cuts in salary and coaching capabilities are justified in that neither turnover nor performance numbers were significantly affected as a result. Yet, this HR manager rebuts this argument by observing that the client's historical analysis did not take into account changes in the economic landscape in the years in question. Since the economy had deteriorated considerably toward the end of the period of analysis in the Calgary region due to the oil sands crisis, and unemployment rates rose sharply as a result, some warehouse team members that would otherwise have left the company opted to stay on labor market uncertainty grounds.

#### 4.2.2 Prioritization and operational efficiency

APEX staff regards client-based prioritization and frequent reprioritization as unilateral, unrealistic and disruptive to operations. To offset the effects, time and effort need to be allocated by management to renegotiate priorities aiming at reducing the impact on the workflow and on meeting SOPs and KPIs. The prioritization shortcomings are blamed on poor forecasting and a lack of interest on the part of the client in the 3PL's operational reality.

The client commonly sends APEX a priority plan on Mondays designed to address different store replenishment needs. In turn, APEX management and operational supervisors decide what needs to be prioritized on the floor based on “when actual freight comes in, what is in the trucks, and in what shape it arrives”, says a top executive. An operational supervisor exemplifies: “depending on the supplier, it may take one receiver to unload a trailer in 10 minutes or five receivers to unload a trailer in three days.” Prioritization decisions on the part of APEX must also consider the “age” of the trailers (how long trucks have been waiting in the yard), how much congestion there is on the floor, and workforce availability. The complexity of the decision-making process is illustrated by an operational supervisor:

*If we need to process difficult-to-unload trailers, people will be moved from other areas to where support is needed. This means these team members will need to leave their assigned tasks undone and produce a PIP (Pallet in Progress) document for someone else to take over. Now we are generating delays and inefficiencies in other areas. The problem is amplified if we are understaffed or if we've got space issues on the floor on that day. But, the client doesn't see our reality when they send us the priority list. And, although they seem to be understanding when things don't get done, this ends up hurting our KPIs.*

KPIs can be challenging to meet when the client unknowingly requests for difficult-to-process trailers to be prioritized, taking up more hours and workers, and yet expect 50 trailers to be processed every day. Managing the contrasting targets of attending to concrete operational issues and meeting KPIs can be more laborious as APEX does not have a say in the number of workers or hours they can have. “It’s almost like we’re being set up to fail”, said a senior executive. At the root of the problem, there is a perception that the client is indifferent to the daily operational predicaments and lacks an understanding of how the flow and timeliness work between the IB and OB warehouses or even how long it takes to fill a trailer.

The difficulty in achieving KPIs is further aggravated by the client’s frequent requests to redirect the original prioritization plan to serve changing store needs. “It’s a constant juggling task and loss of time in back and forth communication”, an inventory manager observes, “as we often need to renegotiate priorities with the client to improve our chances of meeting the

SOPs and KPIs set by them.” Habitual redirections also create confusion as what actually needs to be prioritized and determines operational fluidity and cost-efficiency. A senior manager explains:

*The fact that the client is constantly asking us to redirect priorities affects our KPIs and raises their costs. For example, if a trailer needs to leave half-full or even less (e.g. in the case of freezables like paint which need heated trucks) to deliver products that have stocked out at a store, this affects our CPL (Cube per Load) targets, takes up time from supervisors who need to keep track of happenings to justify to the client, and raises client’s operational costs.*

Priority-based results are also adversely impacted by poor forecasting. By way of example, since priorities are constantly changing and there is no control over when trailers will arrive, shop floor staff need to be frequently called into work last-minute without a guaranteed fixed number of hours. Further, workers are sometimes left to idle if there is less work than forecasted, with cost efficiency and staff morale consequences. An order selector expresses his frustration in the following way:

*They promise us a full shift on a certain day, but then they make us come to work fewer hours. Sometimes, we come in over the weekend and there’s no work. Although they pay us a minimum of four hours, this affects our income and ruins our weekend plans...going somewhere, meeting friends, being with our family. So, many of us feel (APEX) management is just lying to us.*

#### 4.2.3 The KPI challenge and SOP alignment

The full responsibility for the management of the warehouse rests on APEX. Their operational efficiency is measured by KPIs set by the client. Yet, the 3PL has a limited or no say in critical decisions over budgeting, organizational structure, and prioritization which determine the very KPIs, such as CPH (Cases per Hour) or CPL (Cube Per Load), their performance will be measured against. APEX management believes they need to take more control and reduce the level of client’s micromanagement which limits the 3PL’s decision-making capability. “They will need to give us the budget and control what we did with it at



the end of the year, instead of being anywhere and everywhere all of the time”, emphasized a senior manager.

Another area of debate is related to compliance with standard operating procedures. Standard operating procedures (SOPs) establish step-by-step directives on how the client expects tasks to be carried out, from the way orders need to be picked, to moving freight from one location to another, to cycle counting, among many others. The dilemma lies in that even though the client requires SOP to be strictly followed, their warehouse activities were trusted to a supply chain group with long-standing experience in managing warehousing, distribution, and logistics activities and with work philosophy and SOP of their own. “Although we may have failed the recent SOP audit conducted by the client, we did not fail by our group’s standards”, a senior manager justified. Still, APEX is held accountable for compliance with standards established by the client.

APEX management hopes ongoing talks with the client will reduce differences and allow SOP to be rewritten in a way better suited to the 3PL’s work philosophy and meeting their KPIs. Further, after being tested, measured and presented for approval, they expect these improved SOP to serve for replication in client-run distribution centers in other parts of Canada.

#### 4.2.4 Process improvement and development

Besides negatively affecting operations, client’s regular reprioritization and pressure to perform faster have an impact on workers’ learning and skill development. Shop floor staff assert that constant task reallocation is disruptive to learning processes that can only be achieved through repetition and practice. “It takes us much longer to learn something if we are often dragged from one activity to another because they need more bodies”, said an order picker. For their part, managers stress their training capabilities decrease with the oncoming changing priorities as more time needs to be allocated to adapting the workflow and renegotiating these new priorities with the client.

KPI pressures (e.g. number of packs shipped out or trailers processed) are also viewed as detrimental to continuous learning and improvement. “They are always pushing towards a ‘go-go’ mode”, observed a senior manager, “but at some point we need to train our people and take the hit”. A shop floor worker stresses that “faster does not necessarily equate to better, as it can lead to more mistakes being made...there will be smaller boxes crushed by bigger boxes, product improperly packed...”. In line with this perception, an inventory manager describes the dilemma:

*Sometimes performance needs to move slower to do things the right way. Eventually, this results in greater accuracy, more safety, fewer damaged goods, and happier employees. But, in the end, we need to strike a difficult balance between ‘getting it done right’ and ‘getting it done fast’ as warehouse operations unavoidably run at a fast pace.*

However, when choosing between achieving KPIs and developing process improvement, APEX management recognizes the former tends to outweigh the latter. “At the end of the day”, said a top executive, “our performance is measured by how we do against the goals set by our client”.

On a different note, shop floor workers also report learning and improvement initiatives are affected negatively by job dissatisfaction deriving from low pay and lack of financial incentives. The resulting higher-than-industry average turnover level and the need to recruit new employees put an additional strain on already reduced coaching capabilities. The problem is further aggravated when onboarding new hires willing to accept a lower pay are new immigrants to Canada looking to acquire much needed “Canadian experience” (Van Horne Institute, 2018 p. 16), whose sometimes insufficient English skills can slow down their learning process.

Process improvement is both client- and APEX-driven. The client conducts SOP audits (SOPA) to identify how well processes are run and procedures followed. This is the main tool used to measure compliance on the part of the 3PL and point out improvement needs.

Additional process improvement initiatives are conceived by the APEX management team to improve operations and communication and are generally endorsed by the client provided they don't change a whole process. According to a senior manager, "being proactive to improve processes results in more work, but also translates to better KPIs down the road."

However, cost-reduction (see point 4.2.1) and operational firefighting (see point 4.2.2) divert time and resources from ongoing or planned process improvement undertakings. Further, shop floor staff report that although improvement ideas are elicited from across the organization, they frequently "fall on deaf ears" if originated bottom-up. A pallet builder depicts the skepticism of some workers: "why would management listen to us if we're just 'monkeys' to them?"

To improve customer service, stores were visited by APEX management to understand their needs and hear suggestions for improvements. Store managers were encouraged to describe incidents and send pictures. This feedback was then shared with operational supervisors, lead hands and shop floor staff. Teams that achieved perfect loads were rewarded. However, although customer service initiatives are typically prioritized, and this initiative allowed for the number of faults to drop from 20% to 5% in a period of two years, a top executive admitted these process improvement efforts lost some steam after an initial thrust as they were eventually partially overpowered by time-sensitive operational demands.

In previous years, pallets were often built in numbers not easy to break down. A process improvement undertaking proposed by a lead hands resulted in a new orientation to work with numbers better to separate into parts (e.g. 18 boxes can be broken down to 3 groups of 6). The 3PL was successful at designing and implementing this process improvement and this achievement was attributed to the simplicity in following up on this initiative.

Examples of other process improvement efforts described by employees are outlined below:

Table 6 – APEX: Examples of PI initiatives

	Problem	PI solution	Initiation	Design	Execution	Result
Top management/ Client	Inter-province shipments with multiple stops generating delays and Bill of Lading (B/L) inaccuracies	An SOP was created to describe how B/Ls should look, trailers loaded and seals produced	Client	Inventory control	Inventory control and shop floor staff	Successfully implemented
	Excess of spreadsheets and documents to find product information	Integrate information of 5000 products on a single spreadsheet, facilitating visual search and saving time	Client/ Top management	Inventory control	Inventory control	Successfully implemented
	Forecasting problems waste time and increase costs	Develop a forecasting tool using historical data	Top management	IT/ Inventory control	IT/ Inventory control	Partial success. Tool was an improvement over previous one
Supervisory	Poor communication across shifts and inbound (IB)/ outbound (OB) operations	A training manual was made for operational staff to see the impact of their work on other shifts and departments	OS and LH	OS and LH	OS and LH	Difficult to implement due to deficient training capability and overall interest
	Managing difficult-to-process trailers, demanding workers from other sections	Establish a communication protocol across functions	AGM, OS and LH	OS and LH	OS and LH	Not implemented due to limited resources
	Pack sizes and number of items not arriving in keeping with specs (cases differing in size and number resulted in over or underpicking)	Create an SOP for manual cartonization, locking the inventory, and communicating with client for instructions	OS and LH	OS and LH	OS and LH	Not implemented due to limited resources
Shop floor	Unclear packet building information	Create and SOP and provide adequate coaching	Shop floor staff/ Cust. service	LH	LH	Not implemented due to limited resources
	Heavy and bulky cases on high racks are a safety hazard and more difficult to handle	Create an SOP to avoid heavy and bulky cases on high racks	Shop floor staff	LH	LH	Not implemented for unknown reasons
	Pallets are not always built in numbers easy to break down	Train new employees to build pallets in numbers easy to break down (e.g. 18 cases can be broken down to 3x6)	Shop floor staff	Shop floor staff	LH	Initially incorporated to training, but eventually lost steam due to insufficient coaching

The table above shows examples of process improvement activities as described by distinct stakeholders. It allows us to observe a pattern of variability that highlights a relationship between level of initiation and success (or failure) of process improvement activity. Improvement undertakings driven by top management or the client are reported to have greater chances of being successfully executed and followed up on. This is especially the case when the aim of the process improvement action is to satisfy client's requests or improve financial returns.

In contrast, process improvement initiated at the shop floor and supervisory levels are shown to have lower prospects of success. Even if such efforts focus on improving work routines considered critical to attaining operational effectiveness, they are likely to be underprioritized or overrun by seemingly urgent operational challenges. As a result, process improvement activities can either find it hard to get past the design phase or tend to lose momentum along the way due to insufficient resources or poor top-down support. The repercussions of failing bottom-up process improvement initiatives to the overall health of the system are discussed further in the subsequent analysis section (Chapter 5).

#### 4.2.5 Efforts by management to salvage morale

The combination of wages and benefit reduction, career growth limitations, poor coaching, and frantic operational pressure negatively affects performance, undermines morale and impacts turnover rates. The negative cycle continues as greater efforts now need to be made to recruit and training newcomers, often less qualified due to the below-than-average pay offered by APEX. This drains valuable time, energy and resources that can potentially be allocated to organizational learning and process improvement.

Considering these new workers' productivity levels will only reach the expected potential after the sixth or seventh week, achieving KPIs will be more demanding. This situation is further aggravated by reduced coaching capabilities which affect operational efficiency and employee motivation.

To mitigate the negative consequences and retain workers, APEX management resort to promoting 'positive vibes' throughout the facility to build a more comfortable work environment. This involves alignment across management and supervisory levels to permanently show appreciation and verbally recognize quality performance. Further, operational staff is increasingly being exposed to cross-training experiences to provide a sense of learning and skill development in the face of limited upward mobility.

Shop floor level interviewees value the abovementioned initiatives and recognize they play a role in building a positive work environment and in recovering morale, serving as a buffer to reduce performance loss and retain employees. What is more, when shop floor interviewees were asked what they believed was needed to push process improvement forward, several highlighted motivation and morale as factors that mattered.

At another level, APEX managers, operational supervisors and lead hands need to manage their own morale issues as the client is perceived to be incessantly pushing performance boundaries to achieve greater effectiveness at a lower cost. This is perceived to place a permanent strain on the 3PL's managerial and operational capabilities. "No matter how much we talk about it", a lead hand notes, "until it becomes pretty fucking obvious a breaking point has been reached, they will keep on pressing and assuming we can handle it."

#### 4.2.6 Summary of findings at APEX

The business model surrounding the APEX case revolves around an orchestrating client-3PL relationship where the former exercises a financial grip and sets tight operational and performance baselines. APEX needs to manage the distribution center while ceding control of critical decision-making (e.g. logistic plans, performance measurement, staffing).

Client-driven cost-reduction pressures are mainly directed towards keeping employee salaries at the lower end of market pay rates and making HR-related cost-saving decisions that diminish coaching capabilities. These factors are reported to have an impact on morale and performance, negatively affecting employee retention and productivity levels. Higher turnover levels put an additional strain on coaching capabilities as extra HR efforts are allocated to training newcomers who will take time to reach full productive potential.

To better serve store replenishment needs, the client requires weekly plans to be regularly altered without previous consultation with 3PL management. Consequently, operational effectiveness (and performance baselines) are adversely impacted as the workflow on the floor needs to be adapted. In addition, these changes involve staff reallocation which is viewed to interrupt learning processes, waste time, and diminish quality control. Regular renegotiation initiated by managers and supervisors also takes up time.

APEX management attempts to boost morale and productivity by supporting professional development and by promoting a positive work environment. These actions are perceived by employees of different levels to help partially offset higher turnover and diminished performance levels.

Learning and process improvement capabilities are generally considered to be underprioritized in this setting as energy is mainly directed towards cutting costs and resolving performance gaps. The positive work environment is thought to motivate learning and improvement, although no direct reference is made to stimulating process improvement. Moreover, there is a prevailing feeling on the part of shop floor workers that bottom-up process improvement suggestions are disregarded. Successful process improvement initiatives are driven top-down by 3PL management or externally by the client, and generally take place in a discontinuous, *ad hoc*, and mostly reactive manner, and focus on customer satisfaction and cost reduction.

#### 4.3 Case 2: ORION Logistics

This case portrays the challenges faced by a 3PL service provider offering local distribution center services (see Figure 2) as the combination of borderline staffing, excessive rush orders and insufficient floor-space disrupts operations, taking a toll on performance and morale. The case also brings to light a disconnect between different functions, aggravated by an absence of SOPs and antagonistic old-new managerial roles and styles.

In contrast to APEX (Case 1) that had a single client, ORION serves as a 3PL provider to multiple clients in the food industry seeking to outsource receiving, inventory storage, order processing, and shipping operations. The 3PL manages 140.000 m<sup>3</sup> of space out of Calgary and replenishes numerous retailers throughout Western Canada (Figure 2).

ORION is a subsidiary of a leading market provider of 3PL and supply chain solutions in North America, offering clients multi-temperature storage, warehousing, packing, and transportation services. With 13 facilities throughout Canada, the group manages more than 400 employees and a total of 1.4 million m<sup>3</sup> of fresh, frozen or ambient temperature space.

In Calgary, ORION offers its clients fresh, frozen or ambient storage services for a variety of food products ranging from chilled Canadian beef and frozen Asian shrimp to yogurt, mushrooms and canned tuna, ensuring their preservation and quality. The 3PL also provides a consolidation platform which allows clients orders to be customized on-site (mainly retrieved from storage and grouped) before shipping them out to their customers. The figure below illustrates the supply chain configuration involving the 3PL and its clients.

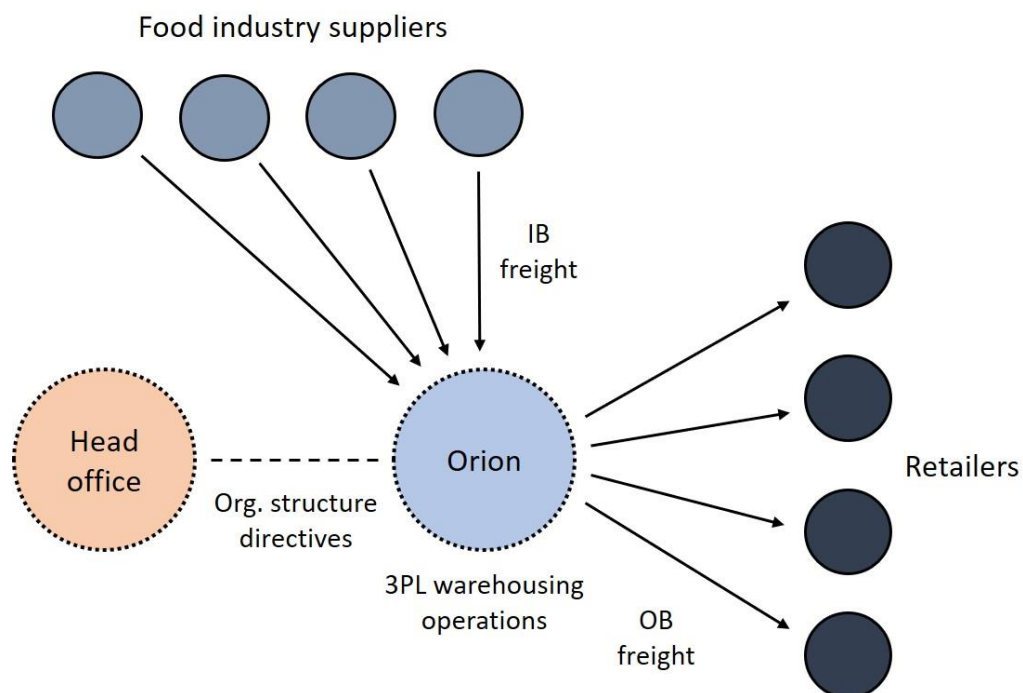


Figure 2 – ORION Supply chain network



The business relationship between ORION and its clients is limited to a dyadic type involving some degree of planning, service levels customization and information sharing for order fulfillment. Rather than a partnership, the 3PL-client relationships are predominantly a form of 'arm's length association' (Lambert et al., 1996, p. 3), with long-term contract involving multiple exchanges, but hardly any sense of joint commitment or joint operations.

#### 4.3.1 Challenges: Restructuring process

The ORION group purchased this warehouse business in the Calgary area in 2013 (interviews conducted in 2017 and 2018) and brought in a new facility manager to revert the negative financial and customer service results of previous years. Upon taking over operations, the new facility manager set forth a restructuring process to reduce costs, support a merit-based recognition system, and maximize area efficiencies. A first step was to bring down the number of shop floor and clerical staff. Old management remained shielded from lay-offs, as per terms of acquisition arrangement.

In general, support-level operational staff viewed this restructuring process as positive as favouritism is perceived to have decreased. However, the push to get more work done with fewer resources added strain to the already frantic daily pressures, affecting morale and operational effectiveness. An operations supervisor describes the challenge:

*I am told I need to focus on supervising and not picking. And yet, we can be short twenty man-hours for the night, so of course I need to pick. I can't just sit down and watch us fail! Before, we used to have a "floating body". Now, if someone calls in sick, we will be short as there is no wiggle room anywhere.*

The facility manager responds to this by stating that "while you have ten people more than you should there is no need to work hard, is there?" Cutting staff too short adds stress and affects morale which "spreads like a cancer", said a receiver. It is also perceived as affecting results as the combination of being understaffed and constantly pressed for efficiency increases the number of touches, damaged goods, mispickings, lost pallets, and loading the

wrong products. “Numbers may have improved”, states a picker, “but at the expense of a worse work environment and poorer service”.

From the new facility manager perspective, the most challenging barrier to the ongoing restructuring process is perceived to be the collision with old management practices and habits. The Head Office decision to keep the old management team in place after the acquisition is blamed for reducing the implementation effectiveness of new ideas and methods.

#### 4.3.2 Customer service and operational disruption

Both 3PL customer service staff and operational supervisors point out that customer service at ORION is inclined to accept order changes and rush orders requested by clients, and communicate these changes unilaterally to operations, without considering the reciprocal dependence between the two departments. This frequent reprioritization on the part of customer service is reportedly oblivious to the warehouse floor reality and operational supervisors and lead hands blame these changes for daily operational and inventory disarrays.

Prioritization criteria is based on a) daily schedules; b) truck order of arrival at the door; c) type of customer; and d) rush order requests. Client and trucking company schedules are created and recreated daily (unlike APEX that works with adaptable weekly plans), often leaving operational staff in the dark regarding arriving and departing freight. Last-minute and changing schedules taking place on hectic days of the week – Mondays, Tuesdays (previous day spill-over) and Fridays – inevitably result in bottlenecks and multiplies the number of mistakes.

Loaders report that mistakes are also increased as pressure to free doors for on-coming trucks can result in damaged goods and wrong products not being properly registered. The latter situation is exponentiated when the unloading process takes longer than expected and trucking companies are putting pressure or making schedule changes to avoid being late for other pick-ups or deliveries. In such circumstances, pickers may need to leave pallets

undone in the receiving isle, due to priority reallocation, creating a floor-space problem for the receiving sector that needs to move these unfinished pallets around with limited room to work.

Large clients' requests that are urgent or for the day are prioritized. Supervisors complain that rush orders are confirmed by customer service without taking into account the reality on the floor, generating operational and inventory disruptions. An operational supervisor illustrates:

*Customers are always prioritized at the expense of our own operational madness. Even if our freezer is full and we need to stack pallets in cut-throughs, against the walls...they keep bringing those trucks in. So, instead of handing cases and pallets one time on the way in and on the way out, they are handled several times to make room for other freight, increasing the odds that something will be damaged or lost.*

This additional handling of products is especially critical on Mondays and Fridays, inevitably demanding overtime work which, paradoxically, management constantly presses operational supervisors and lead hands to reduce. According to a lead hand, daily meetings held in the past to "work things out" between lead hands and the crew helped organize tasks, reduce mistakes, and enhance performance.

Less overtime during that time was partially attributed to these prioritization and coordination efforts. Today's ever-faster pace, in part designed to compensate for headcount cuts, has forced these meetings to be discontinued. A lead hands emphatically states that "doing things right is better than doing things fast".

Operational supervisors and lead hands complain that customer service does not take into account the number of operational staff in the building on a given day when accepting customer loads. A dispatcher points to the lack of cross-functional integration and uses their current system as example, as it is currently unable to indicate if an employee is on holidays

or sick leave. This can result in a worker having the challenging tasks of doing two trucks at the same time.

#### 4.3.3 Performance factors

Financial compensation, training, and career growth are recognized by management as being relevant performance drivers. Ongoing efforts to set performance measurements are based on the need to assess progress towards achieving operational and cost-saving targets. Metrics were also designed to incentivize employees through a merit-based financial compensation.

ORION offers a good starting hourly rate of CA\$ 21 for entry-level shop floor and office clerk positions. This salary is 18% higher than the average rate in the market.

Consequently, HR staff claim more qualified workers apply for job postings than competing firms. However, this salary tops out at CA\$ 22, generating loss of morale for workers with more than two years in the company. A picker described the salary policy as “giving an incentive to come in, but not to stay”. Shop floor workers report that this factor affects performance negatively. To boost morale and performance, ORION management is launching a performance bonus program.

Shop floor staff recognize that the training process for newly hired employees is more efficient today than in the past. Further, substantial advancements have been made in HACCP (Hazard Analysis Critical Control Point) compliance. However, training is perceived as deteriorating in general due to the elimination of trainer roles as part of the downsizing policy.

The increasingly faster pace also reduces coaching time. Thus, after the initial “crash course” training, new hires are frequently forced to rely on informal coaching support provided by co-workers. This often leads to learning and performance dissimilarity, as workers are learning from multiple colleagues holding tacit knowledge, sometimes even conflicting. Moreover, operational supervisors or lead hands often need to focus on putting

out fires and have less time to help employees understand processes, oversee their performance, and enforce standards. This scenario is aggravated by the absence of standard operating procedures (SOPs). An operational supervisor describes the problem:

*Brand new guys are expected to be up to pace in only two weeks. This is never enough. When they go to the floor they get mixed messages and don't perform as expected. Then, they're fired before the third month. And, we're the ones setting them up for failure.*

Top management accepts that training and coaching could be more effective. "There is a rush and need to get that person to the floor and be productive", said an operations executive, "but we need dedicated people who understand all the aspects of the processes that we do in the business and that are given the time to watch, coach and nurture employees as they onboard through the system". In line with this, another manager admits that instead of putting out fires all the time, "lead hands need to allocate time to follow people around, teaching them and making the necessary corrections." Poor training and coaching are associated with lower morale and performance.

Restricted upward mobility was also pointed by shop floor workers as affecting morale and performance. A receiver that has been with the firm for many years believes that management is reluctant to take their most experienced workers off the floor. This would explain why top performers are not promoted to any of the limited number of supervisory roles. "If I don't have anywhere to grow", said this worker, "one day they might lose me anyway." Another worker attempted to explain why warehouse workers will keep their jobs despite their dissatisfaction:

*The best people to hire for warehousing roles are those who have just realized that their dream to get something better are gone, and maybe they have a young family and are ready to commit to a secure job.*

Limited career and salary perspectives take a toll on motivation to improve. Consequently, performance is affected. A shop floor worker describes the generalized skepticism by stating

that “even if we think something is not good for the company, we just do our job, we do what they tell us to do”.

The firm expects morale to be revamped by the ongoing efforts to set performance metrics through the filling out of individual productivity sheets and team-based metric boards. “My job is to rattle people’s cages and make them accountable”, said a top manager. Top performers are expected to receive a performance bonus. These efforts were being implemented during the time fieldwork was being conducted.

#### 4.3.4 The SOP liability

Standard Operating Procedure (SOP) is a document specific to an organization offering written step-by-step instructions of routine operations, aiming at guiding workers to attain efficiency and compliance with industry standards and organizational policies. Unlike other 3PLs, ORION does not have SOPs. Although there are “sheets of commands” that orient how to pick orders, wrap pallets, and keep products at the right temperature, among other routines, they are reported by lead hands not to be as detailed and clear as SOPs typically are.

A lead hand recognizes that having SOPs would help floor workers know precisely what is expected of them and serve as an important tool for management to evaluate performance, as every employee can be measured against the same standards. An operational supervisor adds that SOPs can also reduce mistakes and consistency problems. The latter are caused by conflicting instructions given by co-workers to new hires in the face of diminishing formal coaching capabilities.

The FM accepts the need for creating SOPs and increasing efforts to nurture employees. He also recognizes that “any development is difficult when supervisors and lead hands are putting out fires all the time” and affirms they will start moving in that direction “once the numbers start looking right”.

#### 4.3.5 Process improvement and development

The combination of labor cost-saving and merit-based compensation policies brought about mixed learning and process improvement results. Cuts in support-level operational staff mean that operations are compounded by understaffing, leaving scarce time for anything else than executing floor plans and patching holes as they appear.

Although bottom-up process improvement is incentivized on paper, and the operations director concedes that “workers in the trenches know what needs to be improved more than anyone”, consideration for staff-led process improvement ideas is perceived by operational staff as a rare occurrence. A loader made the following observation:

*We are always pushed harder to work hard, more efficiently, but we are not paid any more to improve anything. Getting things done...like loading a truck faster...that's what they really want. So, why should we bother?*

Moreover, allocating time to process improvement is perceived by some to divert focus from achieving specific performance measurement goals. Conversely, several shop floor workers have also pointed out that they find value in learning (in particular) and process improvement if it helps them better achieve their operational targets. This feels especially relevant to operational staff in light of the new financial rewards programs.

There is a consensus among operational staff that learning is mostly deficient at ORION due to insufficient coaching. Regarding process improvement, an experienced lead hand complains that most process improvement activities “are not always designed to improve effectiveness or make our lives easier”. An operational supervisor notes that process improvement initiatives that effectively move forward are top-down in nature and are frequently motivated by either cost-saving decisions (e.g. voice picking technology to improve accuracy and reduce headcount accordingly) or specific client requests. Adding to this discussion is the controversy over the role of old management blamed for stifling of emerging ideas of improvement.

Examples of process improvement efforts described by employees are outlined below:

Table 7 – ORION: Examples of PI initiatives

	Problem	PI solution	Initiation	Design	Execution	Result
Top management/ Head Office/ Client	Discrepancies between the number of cases on a B/L and PO (Purchase Order) lead to inaccurate loads and demand fixing the disparity with client	Collect data on discrepancies to conduct historical data analysis and establish the source of problems	Client/ OS	OS and customer service	OS and customer service	Partially successful.
	Accuracy issues in the picking process	Voice picking system set up	Head office	Top management/ IT	OS and LH	Accuracy improved, but at the expense of slower process and rework. Attributed to IT issues and insufficient coaching
	BRC (certification for food safety standards) demanded by a client.	Improve HACCP training and number of inspections	Client/ Top management	HACCP	HACCP	HACCP training improved and number of inspections increased
Supervisory	Number of operational headcounts not considered when CSR accepts customer loads and system does not inform holidays or sick leaves	Increase the frequency of meetings between customer service and OS to align decision-making and improve data input	OS	OS, customer service and HR	OS, customer service and HR	Number of meetings initially increased and data input improved, but eventually returned to previous levels.
	Discrepancies between numbers on B/L and PO (Purchase Order) lead to inaccurate loads and require fixing disparity with client	Collect data on discrepancies to conduct historical data analysis and establish the source of problems	OS	OS and customer service	OS and customer service	Partially successful
	Pickers moving pallets without using an RF scanner resulted in lost pallets	Hold meetings to remind staff of scanning pallets before moving them	Inventory control and OS	OS and LH	OS and LH	Situation improves after meetings, but returns to previous levels soon after. Blamed on poor follow up
Shop floor	Forklifts picking up moisture from the freezer, dangerously releasing water on the floor at the charging station.	Remove batteries from the forklifts and charge them at the charging stations	Forklift operator	OS and maintenance	LH	PI resulted in a recommendation seldom followed by operators
	Paperwork produces delays, generates storage challenges and not ecologically friendly	Reduce paperwork by digitizing processes and document storage	Dispatch	Dispatch	Not executed	Although idea was supported, financial resources were not allocated to implement it
	Entering orders on WMS time- consuming	Reduce the number of keystrokes and clicks on WMS by redesigning processes	Picker	IT	Not executed	IT started redesign, but did not follow through



The table above illustrates examples of process improvement activities as described by distinct stakeholders. In a similar way to Table 6 (process improvement activities in Apex, case 1), it allows us to observe a pattern of variability that highlights a relationship between level of initiation and success (or failure) of process improvement activity. The table indicates that when improvement undertakings are driven by either HQ/ Facility manager or clients and motivated by improving financial returns or satisfying clients' needs, chances of being successfully executed and followed up on increase substantially.

Here too, evidence shows that process improvement initiated at the shop floor and supervisory levels has lower prospects of success. Daily operational challenges are prioritized over activities focusing on improving work routines which struggle to move beyond the design phase or tend to lose steam during the implementation process due to deficient resources or management support. The repercussions of failing bottom-up process improvement initiatives to the overall health of the system are discussed further in the subsequent analysis section (Chapter 5).

#### 4.3.6 Summary of findings

The ORION case revolves around a business model where new management led by the facility manager strives to enhance bottom-line results by reducing HR costs and boosting operational efficiency. New management points to the need for managing a restructuring process at the distribution center while overcoming barriers put up by old managerial practices and habits. The borderline staffing resulting from the restructuring is, in turn, viewed by operational supervisors and lead hands as a hurdle to operational effectiveness and coaching needs.

Cost-reduction pressures mainly center around cutting down shop floor staff to a bare minimum and reducing trainer and coaching roles. Diminished training and coaching capabilities, aggravated by the absence of SOPs and increasing workload, reduce operational effectiveness. In parallel, more aggressive performance metrics are set and

enforced. The resulting loss of morale and productivity negatively impact employee retention, only reduced by above-market financial compensation and rewards.

Order changes or rush order requests from multiple clients are accepted by customer service on a daily basis. This creates cross-functional friction with operational staff as it forces operations to make workflow adjustments and reallocate staff. It also diminishes quality control, increases mistakes, and disrupts ongoing learning processes.

Here too, learning and process improvement capabilities are considered to be underprioritized as energy is mainly directed towards cutting costs and resolving performance gaps. Financial compensation and incentives don't appear to motivate learning and improvement, although they are thought to improve performance and lower turnover levels.

Successful process improvement initiatives are also top-down, take place in a discontinuous, ad hoc and mostly reactive manner, and focus on customer satisfaction and cost reduction. Shop floor workers feel that bottom-up process improvement suggestions are mostly ignored.

#### 4.4 Summary of (dis)similarities between APEX and ORION

To support the analysis phase, a series of patterns were identified and classified as common or unique to the two 3PL firms. The patterns emerged from the interviews after conducting a coding process. This was done by firstly identifying the number of times variables and relations between variables were used by different interlocutors during the interviews. Subsequently, they were grouped and categorized into levels of meaning and relevance.

The variables outlined in the table below were used at the analysis stage to establish causal links among them. They also contributed to the understanding of the dynamics of each system.

Table 8 – APEX and ORION: Comparative patterns

Factors			APEX	ORION
Process improvement	General		Top-down, discontinuous and <i>ad hoc</i>	Top-down, discontinuous and <i>ad hoc</i>
	Main initiators		Client/ Top Management (facility)	Clients/ Top management (HQ and facility)
	Implementation success		Client- or cost-saving driven	Client- or cost-saving driven
Performance	Financial		Client diminished salaries and eliminated benefits (such as tuition reimbursement support)	Management reduced staff to a borderline level. “Floating bodies” eliminated.
	Human resources		Client reduces LH roles, forcing LHs to focus more on coordinating the workflow rather than coaching	Management eliminates trainer role. Coaching problem amplified by the absence of SOPs
	KPI		Remain unchanged despite reduced headcount	More demanding performance metrics with less headcount
	Customer service		Client orchestrates weekly plans and daily changes. 3PL-initiated renegotiations are common.	Multiple clients request changes on a daily basis. Renegotiation is uncommon.
	Operational routinization		Client-developed SOP compliance is enforced by the 3PL and audited by the client. These SOPs may be complemented by or conflict with SOPs developed by the 3PL group head office	Absence of SOP. Work sheets used instead
Workforce motivation	Rewards and incentives		Insufficient financial rewards and incentives affect morale	Salary and performance bonus prevent further morale loss
	Work relations	Intra-Firm	Predominantly positive. 3PL management supports building an upbeat corporate culture	Predominantly negative. Facility manager prioritizes results at the expense of nurturing a corporate culture
		Inter-Firm	Predominantly negative. Client’s aggressive KPIs and resource-cutting affects relations with management	Predominantly positive: Customer service consistently adapts to order changes and rush order needs coming from a large number of clients.
	Workload		Constant performance pressure affects morale	Constant performance pressure affects morale
	Cross-training and coaching		Job rotation promoted to build a sense of career development. Coaching deficiencies affect morale	Job rotation occurs based on specific operational needs. Coaching deficiencies affect morale

Table 8 firstly illustrates the patterns related to process improvement. In both firms, process improvement mostly achieves implementation success when either client(s) or top management are behind the wheel. Besides being essentially top-down, it is materialized in an improvised and *ad hoc* manner. This discretionary use contrasts with structured or continuous ways of managing the improvement of processes.

In both cases, process improvement activities are overshadowed by performance priorities, broadly grouped as financial and operational. Pressure to achieve performance targets also takes a toll on morale. Table 8 also outlines motivational factors that either adversely impact performance baselines and process improvement initiatives or serve as a counterweight to restore productivity and morale loss. These patterns are interconnected in complex and dynamic webs of cause-effect relations and areas of influence which will be analyzed in Chapter 5.

## CHAPTER 5: Analysis

Chapter 4 raised key interesting insights regarding the actual capability of 3PLs to develop and implement sustainable process improvement practices. The findings revealed the conditions that enable improvement activities to succeed in 3PL settings. They also bring to light the disruptive role of performance-based prioritizations in allowing firm-wide and sustainable process improvement activities to materialize. These decisions also impact coaching capabilities, employee morale, and even operational effectiveness, depleting time, energy and resources that could potentially be allotted to the improvement of processes.

This chapter looks at developing a deeper understanding into the complex and dynamic webs of interrelations and areas of influence behind prioritization and decision-making which determine performance results, motivational responses, and, ultimately, process improvement practices and capabilities. To this end, a systems and agency analytical approach was adopted.

A systems lens was used to identify and understand the components representing competing demands and also to examine the complex cause-effect interactions of these components and their role in affecting the goals these organizations set out to achieve. Further, an agency lens was used to complement the systems analysis and shed light on power, influence and control factors conditioning the relationship dynamics in these firms.

The analysis begins with a system dynamics methodology employing influence diagrams (IDs) as a tool to illustrate positive (reinforcing) or negative (balancing) feedback mechanisms in systems (Senge, 1990; Sterman, 2001). The main aim of this diagrammatic representation is to visualize the larger picture by identifying causal relationships between a set of variables (Powell and Coyle, 2005), with the intent of summarizing the way in which these variables affect one another within a dynamic system (Howard et al., 2007). The next step is to use a systems lens to understand underlying trends in the interconnected systems described by the IDs (Senge, 1990a), aiming at examining the paradoxical trade-off between achieving operational and cost-saving targets and developing learning and process improvement capabilities.

The second part of the analysis makes use of a Qualitative Politicised Influence Diagram (QPID) tool to include the political elements in the previously described causal mapping by assigning agents and actors to the connections (Howard et al., 2007; Liddell and Powell, 2004; Powell and Swart, 2005). In this study, the QPID model serves to introduce and integrate multidimensional system and agency components. The final step is to analyse how principal-agent relationships identified in the QPID analysis influence the behaviour of the system and the effectiveness of learning and process improvement undertakings.

## 5.1 System behaviour analysis

The analysis firstly focuses on describing complex systemic problems through a causal influence diagram technique which is based on feedback loops. A correlation is ‘reinforcing’ and a plus sign attached to the arrow when two variables either rise or fall together, amplifying changes in the system. A ‘balancing’ correlation occurs when one variable rises and the other falls, helping maintain the stability of the system, in which case a minus sign is attached (Howard et al., 2007).

### 5.1.1 APEX: ID analysis

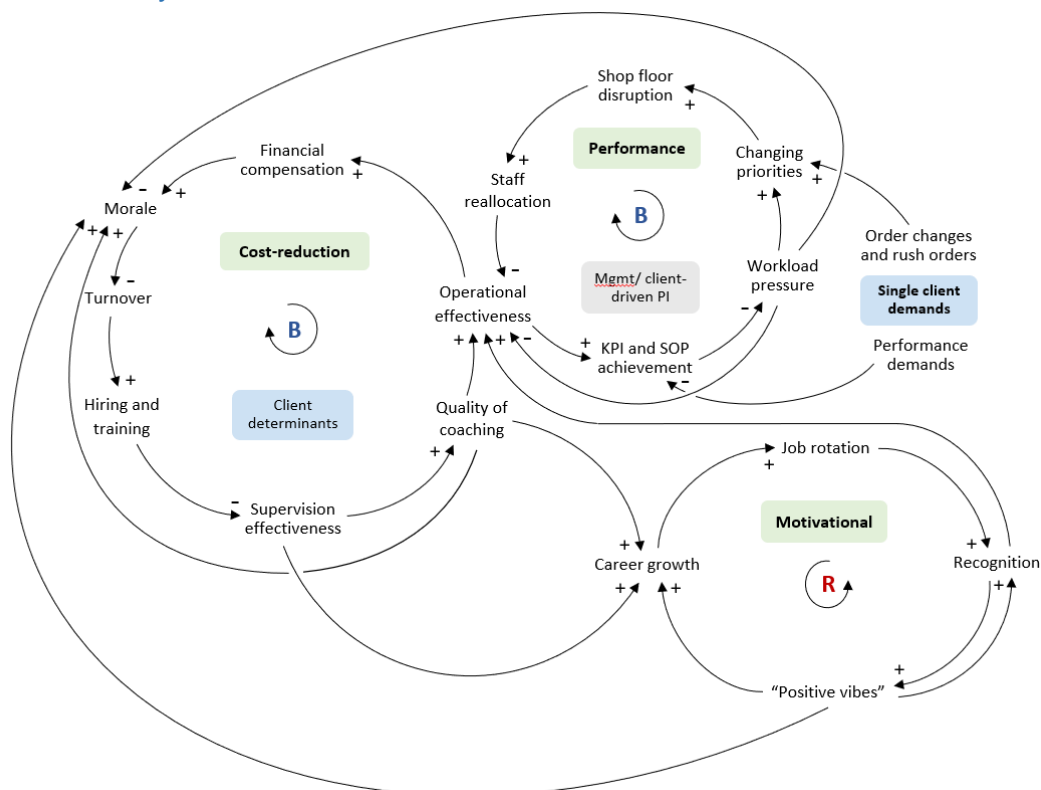


Figure 3 – ID analysis: APEX

Figure 3 illustrates how client-driven cost-reduction and operational pressures take a toll on performance and morale, sucking up valuable time and resources from and discouraging the development of learning and process improvement undertakings. The system is formed by three loops – two identified as ‘balancing’ and one as ‘reinforcing’. The balancing loops are strongly conditioned by unilateral, top-down operational and budgetary parameters set by the client.

The ‘Performance’ loop on the top right-hand side depicts the disruptive effects of varying daily operational plans on the shop floor organization. Successive client-driven prioritization and reprioritization to replenish changing store needs force operational supervisors and lead hands to constantly alter floor plans, resulting in loss of operational efficiency as time and quality control is lost in personnel reallocation and operational plan renegotiation and justification. It also interferes with workers’ internalization of processes and adds workload pressure to compensate for the underachievement of KPIs, partly generated by the focus-diverting changes. This negatively affects morale and, consequently, exerts pressure on turnover portrayed in the ‘Cost-reduction’ loop. It also feeds the vicious cycle as workload constraints further reduce operational effectiveness and complicate workflow management.

The ‘Cost-reduction’ loop on the left-hand side is indicative of how cost-saving decisions (namely, reducing wages and benefits) and an absence of performance-based financial incentives have also eroded shop floor staff motivation and contributed to raising turnover levels. This puts additional strain on already diminished coaching capabilities (the number of lead hands was reduced to cut spending) as extra efforts need to be allocated to training newcomers and putting out daily fires (e.g. warehouse management system is down, forcing manual picking with paper pick slip) with fewer resources.

The resulting deterioration of quality in coaching coupled with the delay of new employees in reaching full productive potential has a negative impact on operational effectiveness and continuous process improvement capabilities. The negative circle is completed as the loss of operational effectiveness serves to justify the client's decision to balance deficient results through cost reduction and put additional pressure on performance baselines. In that context, continuous process improvement capabilities are underprioritized as energy is essentially directed towards resolving performance gaps.

In summary, fewer lead hand positions and decreased quality of coaching negatively affect the perception of career growth opportunities, making morale and employee retention more challenging. The 'Motivation' loop on the bottom right-hand side illustrates the 3PL provider's attempt to counterbalance the negative consequences of the 'Performance' and 'Cost-reduction' loops and boost morale and productivity. This is achieved by offering cross-training opportunities to enhance a sense of professional development (compensating for limited career mobility) and by promoting a positive work environment through showing appreciation for quality performance in different roles and promoting 'positive vibes' throughout the facility to build a more comfortable work environment. These actions are perceived by employees of different levels to help offset higher turnover and diminished performance levels. This positive work environment is also thought to motivate learning and improvement in a general sense, although there was no evidence for this in the data.

It is relevant to stress that the external flows on the APEX case occur internally to the ID diagram. In many 3PI-client relationships, such as in the case of ORION, the outsourced company operates its facility independently from multiple external clients and to its own end. In contrast, in the above case, the single client hired the services of a well-established 3PL to run its facility, while retaining control of critical decision-making such as salary baselines, headcount, operating procedures, and performance metrics. As such, the external flows in APEX are internal to the ID diagram, rather than external as in ORION analyzed next.



### 5.1.2 ORION: ID analysis

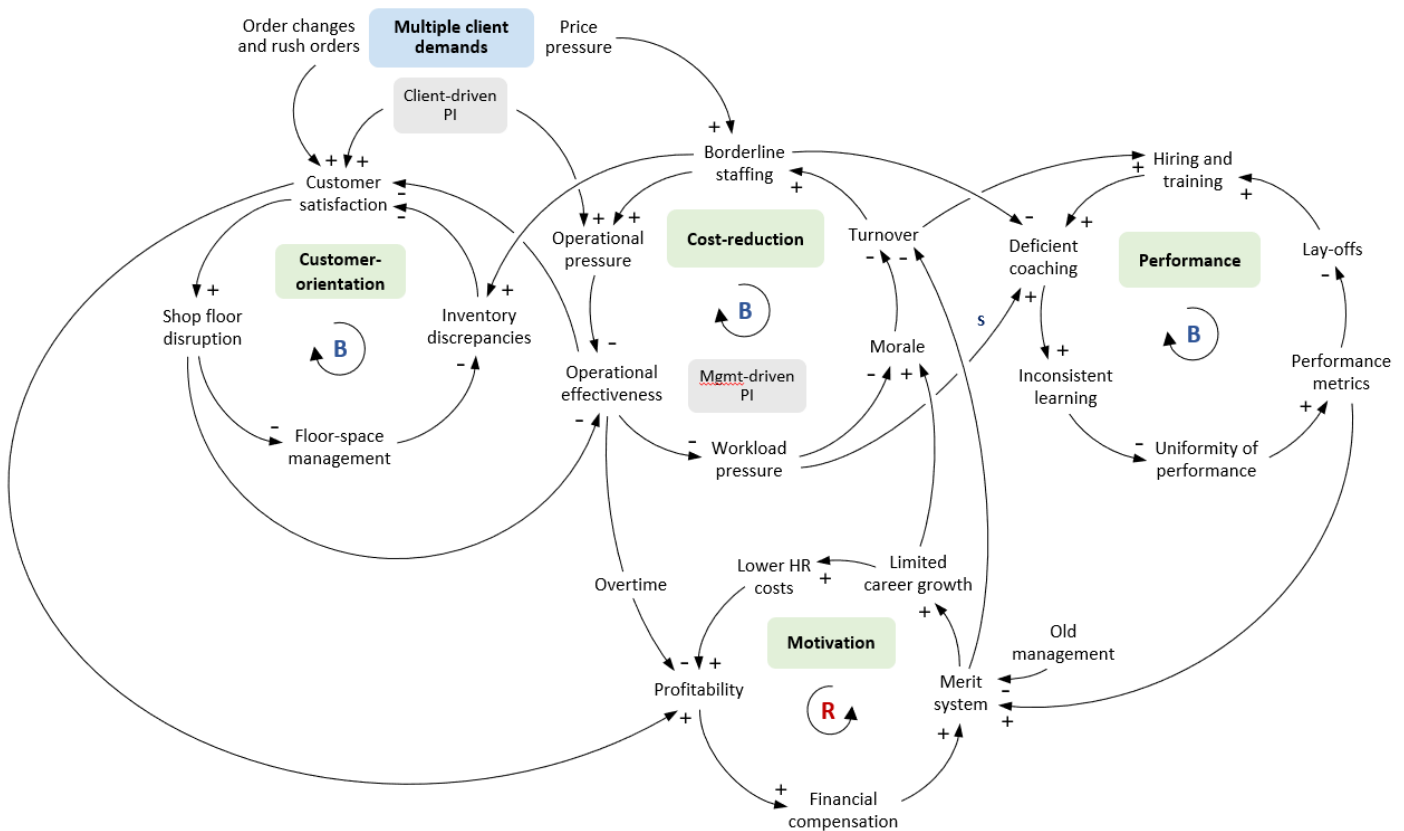


Figure 4 – ID analysis: ORION

Figure 4 portrays how top management-driven cost-reduction and client-orientation pressures impact performance and morale and, as in the APEX case, act as dominating priorities working against learning and process improvement initiatives. The system is formed by four loops – three identified as ‘balancing’ and one as ‘reinforcing’.

The ‘Performance’ loop on the top center of the figure illustrates the disruptive effects of pursuing a ‘zero fat’ staffing policy aiming at maximizing workers’ efficiency and reducing costs. Meeting these two objectives come at the expense of additional operational pressure oftentimes generated by insufficient shop floor staff. The resulting greater number of touches, damaged goods, mispickings, lost pallets, and loading the wrong products affect

operational efficiency and customer service negatively. It also adds to workload pressure which takes a toll on morale and puts pressure on turnover.

To offset operational pressure produced by a deficient number of shop floor workers, ORION opted to turn trainer roles into operational muscle. The 'Cost-reduction' loop on the top center position depicts the effects of reducing coaching capabilities leading to new hires being habitually forced to rely on informal coaching support provided by co-workers. This leads to inconsistent learning and, consequently, dissimilar performance, making it harder for employees to achieve expected performance targets. The negative cycle is completed as some new workers will be laid off before the first three months, putting an additional strain on hiring and training capabilities. Deficient coaching in the 'Cost-reduction' loop is directly influenced by borderline staffing and the resulting workload pressures in the 'performance loop' as operational supervisors and lead hands need to increasingly focus on putting out fires generated by the customer service-based operational disruption depicted in the 'Customer-orientation' loop described next.

The 'Customer-orientation' loop on the top left-hand corner describes the propensity of the customer service sector to accept urgent requests from larger clients. Although this practice supports customer retention and profitability (in 'Motivation' loop), it also generates operational disruption on the shop floor. Consequently, pallet congestion is aggravated in a context of insufficient floor-space, negatively impacting the overall operational effectiveness outlined in the 'Performance' loop. It also results in additional complications on the already understaffed inventory management sector, making room for discrepancies which close the cycle with an adverse effect on customer relations and occasional penalties.

The 'Motivation' loop on the bottom center illustrates the attempt to counterbalance the negative effects created by cost-reduction and client-related pressures. Lower HR costs and flexible customer service supports profitability. This enables the firm to offer above-market wages which, together with a new bonus-based merit system, helps incentivize and retain workers. It also helps offset the impact of limited career growth opportunities on morale caused by the growing tendency to prioritize heavy-duty labor over the more expensive

operational supervisors lead hands, and trainers. Counteracting this positive cycle in some measure, the implementation effectiveness of the new merit-based system is lessened by the resistance to change put up by old management, more inclined to keep the old ways of doing things.

Overall, the 'Motivation' loop is perceived to help stabilize the negative effects of the 'Performance', 'Customer service' and 'Cost-reduction' loops by bettering morale, raising productivity, and reducing turnover. However, this loop does not show to benefit or have a direct effect on the development of learning and process improvement initiatives which tend to be assigned a low priority in relation to target achievement and daily firefighting unless expressly driven by clients, cost-savings or Head Office (e.g. use of voice picking technology meant to improve efficiency and reduce costs).

### 5.1.3 Insights gained from the system dynamics analysis

The ID technique used in this analysis revealed the complex systemic challenges faced by both firms. The analysis draws attention to vicious circles fuelled and perpetuated by decision-making that prioritizes performance metrics, cost-cutting, and satisfying client demands. These negative cycles intensify operational firefighting, reduce coaching capabilities, negatively impact morale, and raise turnover levels, affecting performance effectiveness and reducing learning and process improvement incentives and capabilities. To counterbalance the adverse effects, different motivational strategies are put into effect with some fruition, helping recover morale and turnover, but without any observable impact on process improvement.

Although vicious circles are often found in reinforcing loops (Bianchi, 2016), they are actually observed in the balancing loops in both APEX and ORION. Balancing loops are characterized by correlations that attempt to provide equilibrium to the system. However, in the case study firms, stabilizing efforts struggle to succeed as the responses designed to restore balance do not eliminate the source of the problem and create additional challenges. By way of example, to fix the performance problem resulting from higher turnover rates (mainly attributed to cost-saving policies), both firms heighten tactics to recruit and onboard

new hires expeditiously. With this move, the firms seek to steer the system towards a point of equilibrium. Still, these offsetting actions put additional strain on the HR department and fail to effectively reverse the loss of productivity as depleted coaching resources (also budget-cut related) undermine the beneficial effect of the countermeasure on the system. As such, corrective undertakings intended to relieve the symptoms serve rather as a palliative and do little to rid the balancing loops of their core vulnerabilities.

The system diagrams show that both 3PL organizations fall into the capability trap as described by Repenning and Sterman (2001). Focus on training and coaching takes place in the first week or two, after which time employees are expected to learn-by-doing without a clear follow-up system other than performance metrics which measures numbers rather than the quality of work. From this point on, “go-go-go mode” efficiency prevails over process-driven effectiveness. That is, the speed to accomplish tasks and short-term adaptation to ever-changing operational plans are recognized motivationally (APEX) and financially (ORION), at the expense of gaining sustainable effectiveness through the improvement of work processes.

Complexity management, another concern highlighted by system dynamics, results in a series of challenges in the case study firms. Changes that aimed to improve performance in one department of these 3PLs proved to have a negative impact on other parts of the organizations, affecting the system as a whole (Stata, 1989). In particular, this is the case when customer service or cost-reduction-driven initiatives disrupt floor operations, carrying with it operational and HR-related challenges in both firms.

The analysis also depicted the tendency of the 3PLs to prioritize short-term operational and profit-based results over longer-term development of process capabilities. This includes downsizing decisions to achieve cost-reduction targets and cutting the number of trainers in favour of additional operational roles to tackle shifting daily demands. In relation to learning and improvement, this means efforts are mainly concentrated around the strengthening of current processes, rather than longer-term investments in process improvement, unless specifically driven by client demands or cost-saving needs.

## 5.2 Agency factors influencing the behaviour of the system

From a System Dynamics Group at MIT standpoint, process, not people, are the primary source of low performance (Repenning and Sterman, 2001). Some researchers question this approach that places systems and processes before people and their perceptions (Keys, 1988; Flood and Jackson, 1991; Jackson, 1991). These critics accuse system dynamics of being deterministic in that system structure controls the decisions of human agents, turning them into mere passive respondents of their environment (Lane, 2000). Bloomfield (1982), Bowen (1994), and Sterman and Repenning (2001) place system dynamics on a middle point of human determinism, as agents are perceived to be capable of recrafting the system structure to encourage a different behaviour.

While it is not the purpose of this study to discuss the degree to which point system structures determine human behaviour (see Bowen, 1994; Jackson, 1991; Keys, 1988; Lane, 2000), agency theory is used to complement system dynamics theory. This is done by shedding light on agency issues such as power, influence, and control which condition the health of the system.

The analysis conducted focused on describing complex systemic problems faced by APEX and ORION by applying causal ID techniques with the purpose of capturing the behaviour of these systems. The second part of the analysis will focus on integrating system and agency components by assigning agents and actors to the connections (Howard et al., 2007; Liddell and Powell, 2004; Powell and Swart, 2005) through a QPID (Qualitative Politicized Influence Diagram) tool.

The QPID analysis attributes actors and agents (represented by symbols) to the causal links between variables (represented by arrows) to identify the political factors influencing the dynamics of the system (Powell and Swart, 2005). This analysis allows the examination of the roles and motivations of actors and agents (individually or in coalition) in a managed system, the strength of their influence in specific relationships, and whether the components of the system over which they have control is being used to work in favour of or against managerial interests (Liddell and Powell, 2004).

### 5.2.1 APEX: QPID analysis

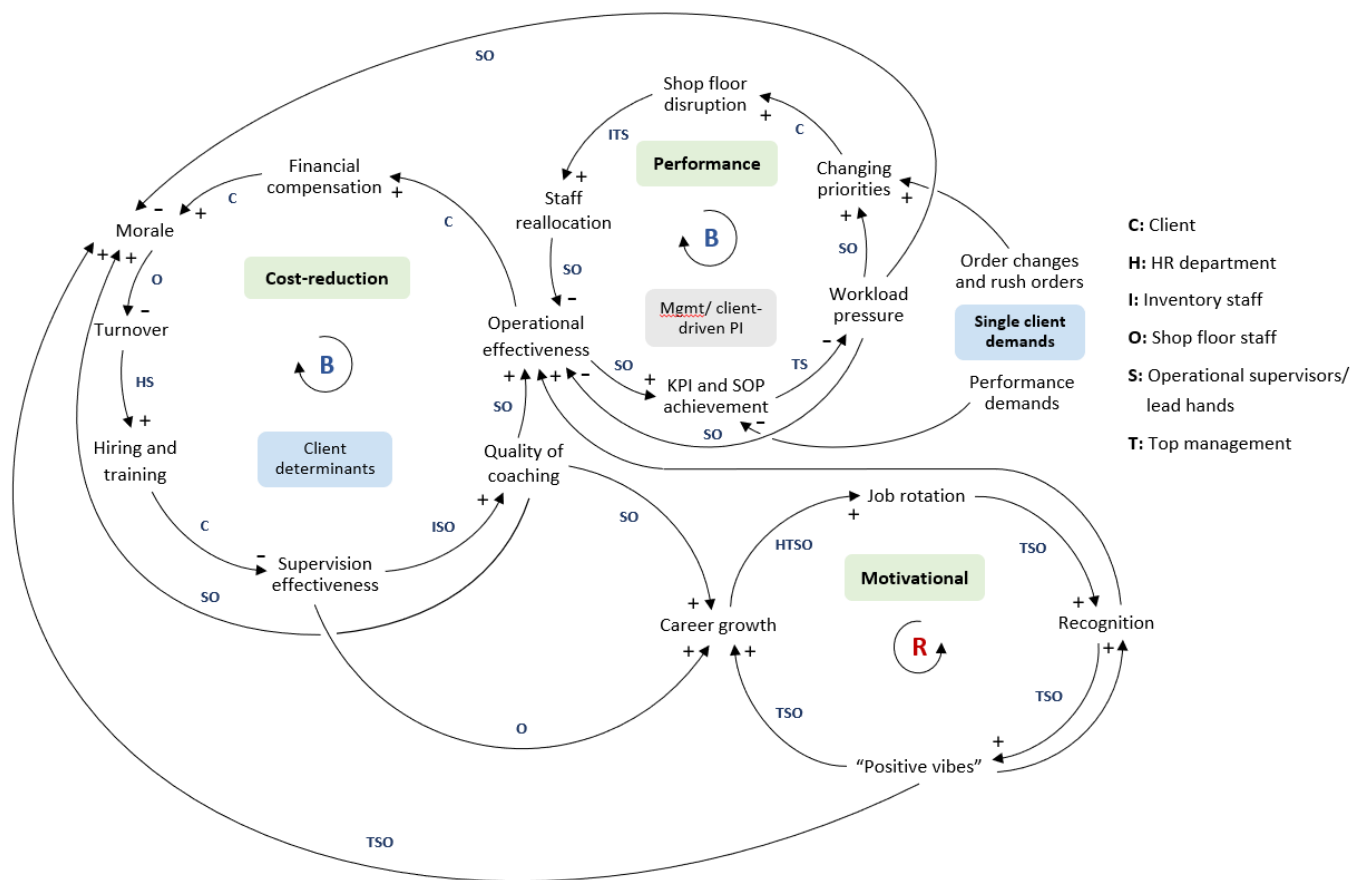


Figure 5 – QPID analysis: APEX

The analysis of Figure 5 captures two distinct principal-agent challenges in the APEX 3PL case: a) between the client and 3PL top management; and b) between 3PL top management and operational staff. In the first challenge, the orchestrating client (C), acting as the principal, is primarily concerned with reducing costs and enforcing flexible operational plans to adapt to changing store needs. 3PL management (T), acting as the agent, is driven by the need to achieve KPIs, SOPs, and REs set by the client. To attain these targets, top management seeks to build employee morale to raise productivity and retain workers. Additionally, they strive to decrease the impact on performance resulting from frequent client-driven changes in operational plans. Top management also works towards reducing

client's micromanagement and gaining more decision-making control over operational and budgetary issues.

The second challenge involves top management acting as the principal and shop floor staff (O) as the agent. Top management concentrates on monitoring, policing and motivating shop floor staff to ensure operations are geared towards achieving performance baselines. Knowing operational workers may not see clear benefits from performing more efficiently, on account of relatively low wages and an absence of financial incentives, top management seeks to boost their performance by building a positive work environment and providing professional development and recognition. In turn, shop floor staff put pressure on top management to see financial compensations improve while performing just enough to survive the 10-hour long shifts and avoid being fired. Shop floor workers also press top management to reduce the impact of cuts in number of hours during slower periods of the year. In response to this reality and as a way of stimulating performance, top management will (non-officially) secure full-time status to high performers.

Below is an actor analysis describing the role of the main stakeholders in the dynamics of the system.

### **The client**

The client's exertion of power and influence is mainly concentrated on ensuring that varying store replenishment demands are attended to while pressing to keep operating costs down to a bare minimum. To address different store needs, client dominates the *changing priorities* and *shop floor disruption* link in the 'Performance' loop by enforcing weekly logistics plans and frequent changes to these plans. To manage costs, client makes one-sided decisions on *financial compensation* (in 'Cost-reduction' loop) by using and interpreting *operational effectiveness* parameters and historical *turnover* levels, partly related to loss of *morale* (resulting from cuts in hourly rates and benefits). The client also effectively controls the *hiring and training* and *supervisory effectiveness* links by defining the number of lead hand headcount which has an impact on coaching capabilities.

## Top management

The 3PL management perceive their core role as directing the facility operations and managing the external relationship with the client. The *changing priorities* and *shop floor disruption* link dominated by the client forces 3PL management to alter ongoing operational plans and establish *staff reallocation* in coordination with inventory and supervisory staff. Top management works with OS to gauge how *operational effectiveness* is affected by these changes and the impact on *KPI and SOP achievements* before setting forth to negotiate with the client the operational viability of a client-driven reprioritization. Top management also collaborates with supervisors to recuperate the loss of performance by allowing additional workload pressure on shop floor staff and attempts to compensate for loss of morale and reduce turnover levels by setting in motion and oiling the wheels of the *job rotation – recognition – positive vibes* links.

## Supervisors

Supervisors see their role as managing the workflow and training/ coaching to ensure operational effectiveness, while exercising flexibility to adapt to client-initiated changes and keeping morale up. To manage shop floor disruption, supervisors need to discuss collaboratively with inventory staff and top management how changes will impact operations and necessary adjustments to the workflow. Supervisors execute changes by having direct control over shop floor staff in the interconnections between *staff reallocation*, *operational effectiveness* and *KPI and SOP achievements*. After conferring with management, supervisors establish workload needs and apply the pressure on shop floor staff to implement the new action plan.

The interconnection between the *turnover* and *hiring and training* links in the 'Cost-reduction' loop is managed by supervisors with human resources who work together in defining the number of workers that need to be hired and the type of training that is required. Their training and coaching efforts is affected by the number of supervisory headcounts solely determined by the client. The link between the *quality of coaching* and *operational*



*effectiveness* is managed by supervisors and it involves policing shop floor staff's performance.

Guided by top management, supervisors implement workplace environment policies and personalized motivation practices in the 'Motivation' loop. Hence, they dominate the *job rotation – recognition – positive vibes* links and work jointly with human resources to ensure the *career growth* and *job rotation* connection sees motivation and operational benefits.

### **Shop floor staff**

Support-level staff perceive their function as primarily receiving instructions to carry out the tasks allocated by OS and LH and adapting to changing circumstances in the 'Performance loop' with little or no say about the shifting responsibilities assigned to them and workload levels. On their end, they can respond by working less efficiently and refusing to increase their workload when requested during the hectic summer or holiday seasons. Conversely, shop floor staff are fearful of retribution at the hands of OS's who can reduce the number of hours of those marked as unsupportive during the slow season (January to April and August to September).

In the 'Cost-reduction' loop, shop floor staff's *morale* levels are directly impacted by client's below-than-market-average *financial compensation* and deteriorated *supervisory efficiency* due to the slash in lead hand headcount. The latter weakens *morale* through diminished *quality of coaching* (hurting the notion of personal development) and fewer *career growth* opportunities (limiting promotions). Springing from the 'Performance loop', *workload pressure* also affects *morale* negatively. In turn, shop floor staff dominate the link between *morale* and *turnover* as they have the power to stay or leave the company. Loss of *morale* is alleviated, *turnover* diminished, and *operational effectiveness* improved by virtue of the *career growth - job rotation – recognition – positive vibes links in the 'Motivation loop'*.

### 5.2.2 APEX: Final notes on the QPID analysis

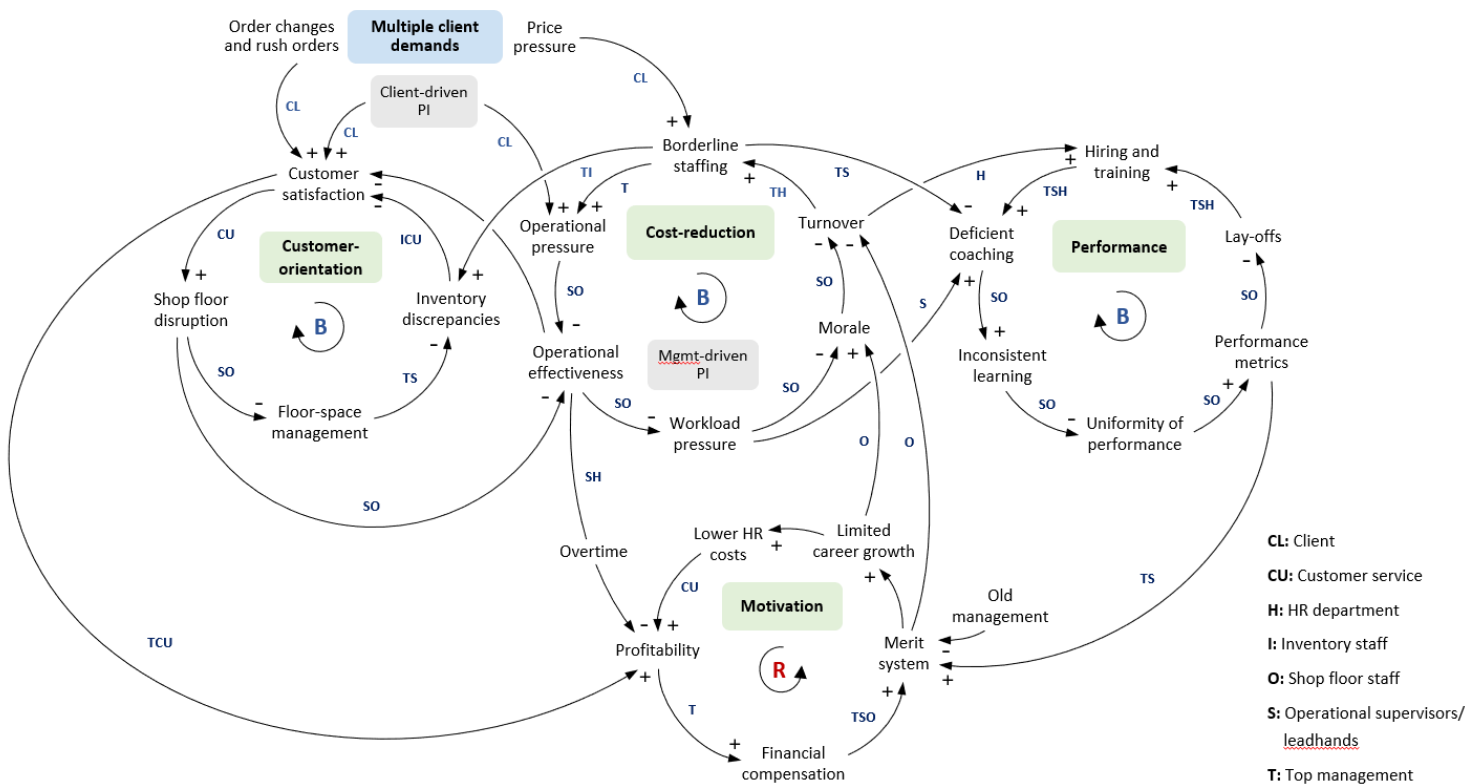
The analysis shows the client holding a tight grip on both balancing loops by putting significant pressure on operational and budgetary baselines. The client plays an important role in the cascading effects of the 'Performance' loop by setting inflexible KPI standards without much consideration for the disruptions inflicted on APEX operations and shop floor staff through constant changes in weekly plans. Top management and supervisors are caught in the middle as they are forced to choose between underperforming (measured by unrelenting KPIs) or hurting worker's morale through constant reshuffling and intensified work pressure. In the end, the drive to achieve performance targets on the part of APEX management normally prevails over the nurturing of a positive corporate culture.

The client also plays a decisive role in the dynamics of the 'Cost-reduction' loop. Here too, the client sets the negative circle into motion by constraining APEX's financial and headcount decision-making which contributes to employees' lower performance and decision to leave the firm. Top management, human resources, and supervisory staff attempt to revert the loss by hiring, training, and coaching (constrained by diminished capabilities) and press workers to perform at peak levels of productivity in the shortest time possible.

To recuperate the morale affected by the dynamics of the 'Performance' and 'Cost-reduction' loops and raise performance and lower turnover levels, management energizes the 'Motivation' loop by promoting a positive work environment and a sense of personal development. Operational staff generally respond favourably to these incentives, designed to boost self-confidence and mobilize a sense of workplace community, but express financial incentives have a stronger motivational power.

The client is viewed by top management and supervisors alike to take an indifferent stand concerning incentives to improve the work environment and existing processes and standard operating procedures (which the client audits for compliance). As their bottom-line is to maximize performance at the lowest cost possible, they are mostly unconcerned with the way the 3PL achieves these goals. Knowing the client prioritizes and presses for

performance results, process improvement activities end up being treated by operational staff as an obstacle in the way of attaining the concrete metrics they are measured against. An exception to this behaviour was reported when this initiative comes as a direct request from the client.



## Top management

By cutting staff down to the bare minimum and setting demanding performance metrics, top management activates the 'Cost-reduction' loop and transfers increasing productivity pressure to supervisors and shop floor workers. Adding to this pressure, 3PL management's propensity to accept order changes cause disarrangements on the floor and conspires against the very metrics set by management. To counterbalance, management also sets the 'Motivation' loop into motion by offering competitive salaries and merit-based financial incentives, while engaging in a tug-of-war with old management on changes in headcount numbers, metrics and rewards.

### **The clients**

Clients, large accounts, in particular, get the 'Customer service' loop underway by holding the upper hand when requesting unexpected changes or rush orders. Guided by top management, customer service tends to offer little or no opposition to clients' demands primarily for customer satisfaction reasons and, to a lesser extent, as surcharges are paid for many client-originated changes.

Initially, operations and inventory, not customer service, suffer the direct consequences of these alterations as the volume of work, pallet congestion, and stress build up on the floor and increase the number of inefficiencies and errors. Eventually, responsibility falls back on customer service that must explain or justify delays, damaged goods, or inventory discrepancies to the client and incur penalties. Customer service, inventory and operational staff habitually engage in finger-pointing on the negative sequels affecting their respective routines, performance metrics, and morale as illustrated in the 'Cost-reduction', 'Performance', and 'Motivation' loops. Although client-initiated changes are included in the blame game, clients are not involved in these discussions since they have already paid a surcharge for these changes.

### **Supervisors**

Supervisors perceive their main function to be to ensure operational efficiency and coach operational staff. OS and lead hands are subject to daily operational changes coming from

customer service without much margin for objections – a fact which strains this cross-functional relationship. Supervisors need to conduct these changes by having direct control over shop floor workers within and across the 'Performance' and 'Cost-reduction' loops. Their interaction is reported to be more operational than motivational, as they assume this is mainly the role of financial incentives and rewards put into effect by top management.

Coaching efforts are affected by a shortage of LH, elimination of trainer roles, and new hires fired for underperforming. In addition, borderline staffing policies force supervisors to do order picking when understaffed, reducing coaching capabilities even further. Supervisors blame top management for undermining the achievement of performance targets with the resulting rise in inconsistent learning which, coupled with additional workload from client-initiated changes, is reckoned to be a formula for a growing number of inefficiencies and errors. This causes multiple friction points with floor workers, inventory, and customer service, as well as discontentment with upper management, blamed for building this tension up by simultaneously toughening metrics and trimming resources.

### **Shop floor staff**

Operational workers view their role as merely to execute instructions passed on by supervisors. Playing a central role with these actors in the 'Performance' and 'Cost-reduction' loops, unexpected workload and metrics pressures tense the relationship with OS and LH in some measure. Supervisors are perceived to divert the blame to other functions while pressing on performance and reducing inefficiencies and errors (together with the occasional interventions from the facility manager). Shop floor staff have mixed feelings towards management: upset with increasing workload and performance demands, while satisfied with salaries and merit-based financial incentives. The effects of loss of morale leading to turnover from the former is somewhat diluted by the latter which support the 3PL's retention efforts.

#### 5.2.4 ORION: Final notes on the QPID analysis

The analysis shows evidence of top management's interventionist approach in all the loops. It is involved in the planning, execution, and direct control of performance management, cost-reduction, and financial incentives. The 3PL management uses its power to put the firm's HR and operational capabilities to the limit by reducing HR-related costs, raising performance measurements, and giving the green light for customer service to accept order changes and rush orders. Supervisors and inventory staff can do little but adapt to these inconstant scenarios playing out in front of them every day. To survive, they must master the necessary resilience to perform and correct errors with the scarce human resources made available to them. Shop floor workers are torn between managing their workload pressure and performance metrics and the appeal of being financially rewarded by such efforts.

To counter extenuating working conditions, top management offered financial rewards for high productivity. Those workers whose metrics were considered deficient were simply fired to avoid additional coaching costs. For their part, operational staff bitterly complained about the stress generated by management but, when all was said and done, kept their focus on meeting performance targets to gain monetary rewards and avoid being fired.

Another observation from the analysis is that the 3PL management's focus on customer satisfaction, combined with aggressive productivity and cost reduction practices, backfire in different directions. For instance, performance and financial goals can sabotage customer satisfaction in some respects as they also give rise to additional delays, inconsistencies, damaged goods, and errors. Additionally, the drive to achieve these strenuous targets can, paradoxically, have an adverse effect on the very performance (e.g. greater number of touches) and cost reduction (e.g. penalties for damaged goods) goals they set out to achieve.

Pressured to achieve operational efficiency by top management and supervisors and drawn to financial rewards, shop floor staff focus on meeting their individual targets in constantly changing floor scenarios. Under these conditions, process improvement initiatives are given

a low order of priority in part due to an absence of specific monetary rewards and scarce attention given to worker-initiated improvement initiatives. Clients pursue changes in processes, which customer service is quick to accept, while oblivious to the resistance found in the 3PL operational staff seeing client-driven process improvement as an interference to achieving rewards (support-level and mid-range staff) and resolving routine operational challenges (mid-range staff).

### 5.2.5 Insights gained from the QPID analysis

The QPID analysis complemented the system dynamics approach by uncovering influence and power forces behind the dynamic cause-effect relations in the different systems described in point 5.1. The analysis revealed a constant power struggle between decision-makers (client-top management at APEX; new management-old management at ORION) around operational and financial performance goals and outcomes, where the client (APEX) and new management (ORION) ultimately come out on top.

Client (APEX) and top management (ORION) relations with mid-range and support level staff are far less balanced, as the former enforce performance, financial and customer-based decisions and baselines top-down, without much consultation or regard for the consequences on operations and morale. Supervisors (ORION) and top management and supervisors (APEX) are at a crossroads since putting workload pressure for shop floor staff to achieve unyielding performance targets comes with a performance and talent retention backlash, as operational workers can respond by lowering productivity and leaving the firm. Offsetting attempts through financial (ORION) and recognition (APEX) incentives help but are deemed insufficient.

In so far as the improvement of processes is concerned, management incentivizes such contributions down the hierarchical structure. However, bottom-up process improvement initiatives are rarely prioritized by management when they do occur, making support-level staff feel discouraged. To make matters worse, supervisors and shop floor staff can see process improvement as an obstacle to resolving urgent tasks and achieving the performance metrics they are constantly hard-pressed to concentrate on.

### 5.3 Cross-case analysis

By comparing and contrasting both cases, this section explores synthesizing relevant findings that support generalizations which will be discussed more in-depth in the Discussions and Conclusions chapters. To attain this end, influence diagrams illustrated in this chapter are analyzed in an iterative manner.

Despite having a different structural configuration, where APEX provides dry distribution center management services for a single client and ORION offers multi-temperature distribution services to an array of clients, the case study firms operate in a similar rapid-moving 3PL setting, constantly exposed to multiple internal and external demands. They also share complex systemic challenges stemming from client (APEX) or top management (ORION) decision-making/ prioritization. The analysis revealed how short-term operational, customer-oriented, and financial decision-making, highly prioritized in both firms, sets in motion a domino effect of implications leading to vicious circles that affect the health of the systems and confine process improvement to specific non-routine initiatives.

To meet operational targets and adapt to customer-initiated changes, management at APEX and ORION resort to firefighting and exert pressure on shop floor workers. Demanding KPIs and operational routinization (standard operating procedure-based at APEX; work sheet-based at ORION) serve as performance measurements that are negatively impacted by the loss of coaching capabilities and work overload (HR cut-related), which ultimately raises the number of errors, damaged goods, and delays. This ends up biting the quality of customer service and affects morale which hurts productivity and raises turnover levels in both firms.

Differently, but intimately interconnected with the operational and customer-oriented dimensions described above, financial performance enforced top-down is put into effect through distinctive cost-saving strategies. APEX focuses more on keeping wages and benefits at the lower end of the market scale, while maintaining an adequate number of shop floor employees; ORION chooses to offer wages and benefits at a higher range but works with a borderline staffing policy which practically eliminates any slack. However, irrespective



of each firm's unique financial performance practices, the end result is the same: cuts in HR costs have a negative effect on performance effectiveness. Motivation also takes a hit due to deficient coaching, work pressure, and insufficient financial rewards (APEX) or detrimental work environment (ORION). Attempts to rescue the loss of morale through motivational (APEX) or financial (ORION) incentives only partially serve to mitigate the negative consequences.

At the top of the pecking order, the client at APEX and new management at ORION enforce short-term operational, financial and customer-based decisions and baselines top-down, without much consideration for the long-term consequences. Supervisors (ORION) and top management and supervisors (APEX) are caught in the middle as they need to strike a fine balance between putting pressure on unmotivated shop floor staff to achieve demanding KPIs and managing morale loss which impacts performance and retention.

Lastly, and most importantly for this study, the analysis shows that by giving prominence to operational efficiency, reducing costs, and serving customers, resources are diverted away from learning and process improvement undertakings in both firms. Although supported on paper, process improvement ideas proposed by shop floor staff seldom materialize beyond the design phase. Lacking in clear rewards or incentives, they can even be perceived as an interference to achieving the performance baselines workers and supervisors alike are ultimately measured against. When process improvement does happen successfully, it is typically top-down initiated, *ad hoc*, and cost-reduction driven.

## CHAPTER 6: Discussion

This study set out to gain insights into how conflicting demands and decision-making faced by 3PL firms in Canada affect the prioritization and effectiveness of learning and improvement initiatives. To attain this end, it was important to understand how successfully process improvement is designed, executed and controlled over time by staff at the management and operational levels of 3PL providers. The study also explored how the systems-agency relationship between shop floor operational staff and management, and between 3PL service providers and their client, determined improvement activity associated with long-term organizational learning.

The idea of sustaining process improvement over time might seem a clear goal at a first glance, especially considering the need of 3PL providers to maximize efficiency, cut costs, and optimize customer relations (Wallenburg, 2009). This notion is backed by 3PL industry leaders and scholars alike that underscore the importance of streamlining work routines to remain competitive. However, this research has shown that 3PL service providers may not be motivated to undertake process improvement which competes with operational hole patching and beyond the achievement of financial and customer satisfaction goals.

In real-world 3PL settings, such as in the case study firms, it is possible to observe a pattern of variability that highlights a relationship between level of initiation and success (or failure) of process improvement activity. As this chapter will discuss, process improvement undertakings with strong top-down support have shown to have greater chances of being successfully designed, executed and controlled. This is particularly the case when the reason behind the drive is to satisfy clients' requests or improve financial returns. In such instances, improvement efforts may be prioritized on par with the need to fix daily performance gaps.

Conversely, bottom-up initiated process improvement with a focus on streamlining work routines are prone to being overrun by everyday operational challenges and client/ cost-cutting improvement priorities and have thereby lower prospects of success. Improvement

initiatives originating at the shop floor and supervisory levels and aiming at correcting work processes are either implemented and lose steam after an initial thrust or struggle to even move beyond the design phase. The reason these undertakings often fail to get off the ground is mainly attributed to insufficient resources and poor top-down support, but also lack of reward and perceived value of such activities.

This chapter discusses the key findings revealed in Chapter 4 and analyzed in Chapter 5 through a combined systems-agency approach. It begins by pointing to the findings that have a direct bearing on the two questions of this thesis (Sections 6.1 and 6.2). Section 6.3 then compares barriers to organizational learning and process improvement detected in the study with those reported in literature.

#### 6.1 How effectively is process improvement designed, executed and controlled over time by staff at the management and operational levels of 3PL providers?

The first question sought to determine the degree to which process improvement initiatives are successful in 3PL settings and why. Of particular importance was understanding the role of clients and/or 3PL staff in the success or failure and improvement undertakings over time.

Although incentivized on paper, this study found limited evidence of sustainable process improvement activity in the investigated firms. This is not to say that process improvement does not happen in these organizations. It does. Data collected found past or current process improvement undertakings taking place in both firms that range from creating color pallet tags for storing in different temperature spaces, to reducing time-consuming key stroking on the warehouse management system (WMS) when entering orders, to resolving paperwork inaccuracies, to processing difficult trailers, and to forecasting problems more accurately. However, this improvement of processes takes place in an infrequent, reactive and *ad hoc* manner, far removed from the principles of continuous improvement (and organizational learning, broadly speaking) which implies a proactive commitment of all personnel with ongoing changes to existing processes.

Process improvement initiatives fueled by an urge to keep clients satisfied and maximize financial returns have the full support of top management (ORION) or orchestrating client (APEX) and, thereby, have the greatest chance of being successfully implemented. In contrast, although management recognizes shop floor workers are better able to determine what processes need to be improved, bottom-up initiated improvements aimed at streamlining and simplifying work processes tend to be less prioritized, even if these process improvement initiatives will ultimately help optimize use of worker time and increase the overall efficiency of operations.

In sum, this study found that the limited improvement of processes in the case study firms is driven by specific motivations. And, in contrast with core principles of continuous improvement (Bessant and Caffyn, 1997) and continuous process improvement (Ward, 1994), process improvement occurs in a sporadic and discontinuous manner. This stands in contrast with the more proactive, strategically-structured initiatives with bottom-up feedback, designed to be rationally and uniformly applied across the system, often portrayed by industry interlocutors as being how process improvement is or should be actually managed in their respective firms. Consequently, instead of continuous and rationally structured, the process improvement development process in 3PL firms frequently takes a more improvised and *ad hoc* form.

Top management often talk about encouraging workers to analyze processes and generate process improvement ideas bottom-up, even if – in actual reality – they are mostly interested in achieving customer satisfaction, financial returns, and performance indicators. At the mid-range level, operational supervisors and lead hands take a special interest in improvement projects as they recognize that process optimization will help them better manage work routines and reduce stress. Yet, being drained of resources, they are left with little choice but to run around putting out fires, focus on meeting KPIs, and streamlining existing processes. Shop floor workers are mostly indifferent or cynical to the improvement of processes and also at times resistant to such initiatives as it stretches their scarce resources of time and attention to activities that are not rewarded and increases the risk of not achieving the set KPIs against which they are assessed (and at times, rewarded). As such,

it is clear these firms lack a support structure from top management to maintain and develop improvement initiatives.

From a viewpoint of the costs of process improvement relative to value, improvement efforts in 3PL environments are in general perceived by upper management to take critical fire-fighting resources out of daily challenges and hurt financial performance by demanding additional workers/ workload to compensate for 'lost time'. Presumably, the main problem in 'stopping to review and correct', *sine qua non* for process improvement practices, is that it comes with a temporal delay in reaping the benefits (Rahmandad et al., 2009). And, this delay can be further strengthened by budgetary constraints because it forces a strong tradeoff between short-term and long-term results.

When weighing the choice of meeting KPIs against prioritizing the improvement of processes, the former is pointed to usually come out on top. Although supervisors recognize the structural importance of optimizing processes for long-term operational sustainability, the main challenge for process improvement prioritization is two-fold. Firstly, investing in the improvement of processes doesn't help them deal with urgent daily plights any better. These everyday challenges include multiple demands, changing priorities, and unforeseen operational events. In addition, allocating time to developing process improvement is viewed by supervisors and operational staff alike to divert attention away from achieving KPI (APEX and ORION) and SOP (APEX) targets by which their performance and operating procedure compliance are ultimately measured against. Secondly, depleted coaching capabilities reduce supervisors' ability to execute and control new and ongoing process improvement initiatives. Arguably, scarce resources force attention to be mainly divided between a) organizing, adjusting, and overseeing the workflow of operations; b) avoiding negative repercussions on quality and performance goals; and c) prioritizing corrective coaching to enforce current standards (e.g. worksheets, SOPs) and solve unexpected problems (e.g. loading dock equipment failure).

A permanent sensation of lagging behind in performance, therefore, leads the 3PLs to allocate ever more efforts to working harder to achieve set targets. Consequently, less time

is dispensed to the critical and professed need of prioritizing investments in learning and process improvement. This deficiency in capabilities inadvertently perpetuates the need for additional work effort and putting out fires to reduce the performance gap (Lyneis and Sterman, 2016). By falling in a self-inflicted 'capability trap' (Repenning and Sterman, 2001), the 3PLs find it difficult to build capacity and take a long-term view to performance improvements which would boost the health of the system. These concepts will be further discussed in section 6.2.

In comparing results obtained in this study with literature, it is interesting to observe the extent to which common denominators among authors relative to process improvement implementation challenges are applicable in the case studies. These include hurdles that are specific to complex and dynamic time-crunched supply chain contexts.

In their role of providing efficient and customized logistics services to their clients, 3PL providers need to engage in internal and external integration of processes (Zhao et al., 2011). Executing process improvement initiatives can be difficult to incorporate in firms' everyday activities (Repenning and Sterman, 2002), more so in frenetic 3PL environments naturally exposed to multiple demands, conflicting priorities, and unexpected operational events.

Repenning and Sterman (2001) argue that to understand the factors that work against process improvement implementation we first need to capture the contextual influences that enable or inhibit its realization. In the case study firms, discerning clients squeeze 3PLs by a) putting pressure on price and reducing profit margins; b) demanding operational excellence; and c) expecting customized improvements. In response, and seeking to increase their margins, 3PLs retrench and attempt to resolve time-crunched operational problems by overloading firm employees and resorting to an army of poorly committed temporary laborers during peak seasons. These contextual factors help explain why process improvement fails to materialize as a routine practice at APEX and ORION.

Barriers to organizational learning (see point 2.2.3) and more specifically to process improvement implementation (point 2.4.2) were discussed in Chapter 2. Scholars capture a broad scope of challenges, ranging from cognitive to managerial and cultural factors. Amongst other things, this study showed the high impact of managerial factors on process improvement achievements.

To begin with, top-down commitment to improvement measures was more apparent than real (Madison, 2005). Although incentivized on paper, management did not provide the necessary mechanisms and resources to get process improvement initiatives off the ground, save for delimited cases. This was evident from the absence of rewards (Emery, 2009), insufficient recognition for contributions (Bessant and Francis, 1999), deficient process testing and training (Page, 2015), and absence of employees especially assigned to coordinating process improvement activities (Bateman, 2005).

Most notably, both firms engaged in aggressive HR cost cuts by keeping headcount (ORION) or financial incentives (APEX) low. In addition, trainers and/or lead hands were substituted for order selector or forklift operator roles to further reduce costs and add much needed operational muscle to the floor. Paradoxically, the resulting loss in coaching capability brought about performance inefficiencies and inconsistencies, helping fuel a firefighting mentality (Repenning and Sterman, 2001) and the resolution of performance issues by strengthening process routinization and standardization (Benner and Tushman, 2003), rather than by exploring different ways to improve current practices (March, 1991).

This problem-solving approach to closing operational gaps and enhancing performance by emphasizing existing processes suck up time, energy, and focus that could otherwise be used to understand where corrective actions needed to be made (Garvin, 1993; Barrat, 2004). As such, HR-based cost-cutting decisions clearly worked against process improvement undertakings by shifting attention and resources away from improvement activities.

Several scholars recognize that human resource enhancements and managerial commitment are essential to improve processes in a sustainable manner (Powell, 1995; Ahire et al., 1996; Savolainen and Haikonen, 2007). Employees can be empowered (Safari, 2016) to make better decisions concerning how to cope with irregular and emergent events (Morita, 2005) and improve work methods (Kaynak, 2003). However, although employee empowerment theoretically took place in the 3PLs (financial incentives at ORION; work environment and personal development at APEX), and power structures did not seem to undermine open communication between subordinates and their supervisors (Coopey and Burgoyne, 2000; Bisel et al., 2012), insufficient attention was given in practical terms to bottom-up improvement activities. In fact, and as already mentioned, process improvement was generally viewed by employees at all levels to divert focus from closing operational gaps and achieving KPIs. Thus, even if this empowerment and communication relative to the improvement of processes exists, it was not found to lead to any visible results directly.

In the case study firms, the combined action of cost-saving practices and unpredictable customer demands worked together to disrupt operations. Arguably, although customer-driven order changes and rush orders generated an array of problems on the floor, these issues could have been better mitigated with sufficient numbers of qualified staff.

Loss of morale, another spin-off from the depletion of HR resources, also worked as a barrier to process improvement implementation. Morale issues helped perpetuate the firefighting dilemma by reducing productivity (stemming from lower motivation and higher turnover levels) and take up scarce time that could potentially be used for improvement purposes (although there is no evidence available time would be used for this purpose). In this line, poor cross-functional alignment (Stank et al., 2001; Frankel et al., 2002) between customer service and operational staff and the resulting floor changes further tighten precious time availability in fast-moving 3PL environments.

Literature suggests that trust and collaborative efforts are vital for members of a supply chain network to engage in process improvement investments beyond their boundaries (Spekman et al., 2002; Fawcett et al., 2012; Trkman et al., 2007). In such contexts, commitment may



lose momentum if these initiatives are not perceived to be advantageous to all the parties involved (Lambert and Schwieterman, 2012). However, rather than mutually beneficial, evidence pointed to process improvement being a one-sided affair in the studied cases. When clients required improvement measures, 3PLs quickly moved to address this request on customer satisfaction grounds without there necessarily being any expectation of advantage to their own bottom-line. Hence, process improvement development is perceived as beneficial and necessary by a 3PL when the risk of losing a client is heavily weighed to the upside. Client-driven process improvement initiatives are thereby designed and implemented regardless of any ongoing trust and collaborative behaviour.

Scholars also emphasize that the success of process improvement implementation is intrinsically dependant on a firm's change management capabilities (Rich and Bateman, 2003; Cater-Steel et al., 2006; Chakravorty and Hales, 2017). This research observed that when process improvement undertakings (mostly, top-down and client or cost-saving driven) were given the green light to move forward in both 3PLs, change management was not a hurdle to its realization (see examples on tables 6, p. 83 and 7, p. 95). In such cases, management support and resources were uniformly provided in the planning, coaching and monitoring phases, ensuring the desired change was implemented and adopted successfully. Accordingly, the study showed change management did not pose a major threat to process improvement design and implementation high on clients' or top management agenda.

## 6.2 How does the systems-agency relationship between shop floor operational staff and management, and between 3PL service providers and their client(s), determine improvement activity associated with long-term organizational learning?

The second question seeks to capture the complex and dynamic cause-effect interactions operating simultaneously across different components of the systems and sub-systems (Senge, 1990a; Sterman, 2000). It also aims to gain an understanding of the source of decision-making, including detected areas of power, influence, and control, determining the behaviour and health of the systems (Powell and Coyle, 2005; Howard et al., 2007). As in the first question, the main aim here is to assist in answering the central question of this

thesis: How do conflicting demands and decision-making faced by 3PL firms in Canada affect the prioritization and effectiveness of learning and improvement initiatives?

To answer the second question, this study chose to make a complementary use of systems and agency-based approaches. This was undertaken to explore the multi-dimensional relationship between context, vision, structure, management, culture, and processes in relation to their influence on sustainable learning and improvement of processes in 3PL environments.

By using a causal influence diagram technique, it was possible to identify complex systemic problems as well as the actors that determined specific links. At its core, the ID analysis revealed that the resolute fixation on attaining performance metrics, reducing costs, and satisfying client demands engenders a series of vicious circles by intensifying and heightening cause-effect relations. While it is very clear that any organization would find it very hard to survive without properly addressing these aims, the problem lies in how, by doing so, they feed an unhealthy system that ultimately sabotages the very fundamental goals they set out to achieve.

Looking to improve financial results, both firms undertook cost-reduction initiatives focusing on human resources. APEX's client forced cuts in wages and benefits on the 3PL-managed shop floor staff. A number of lead hands playing key coaching roles were also substituted for order selectors in furtherance of extra cost-savings. On ORION's side, top management calculatedly kept headcount at the bare minimum to lower labor costs. Additionally, coaching capabilities were depleted with the elimination of trainer roles during the restructuring process.

At the root of this general disinterest in capability-building is top management and HR professionals' view of the limited return on investment attributed to the fast turnover levels of shop floor staff. Because these workers are difficult to retain for long due to the strenuous physical activity and continuous pressure of warehouse work, there is a concerted effort to ramp new hires up to full productivity as quickly as possible and get the most out of them

before they reach the inevitable saturation point and decide to leave. Consequently, this perception of workers' short life cycle in hectic distribution centers serves to justify insufficient investments in capability building, at least at the support staff level.

In the operational dimension, managers and supervisors in both firms are forced to juggle between achieving performance baselines and satisfying unanticipated client demands. Managing these competing targets added pressure to operational supervisors and lead hands as constant operational plan prioritization and re-prioritization attenuated effectiveness and raised stress levels.

Interconnected with the two previous dimensions, increasing work pressure coupled with deteriorating coaching capabilities negatively affected performance, undermined morale and led to greater turnover rates. The effects cascaded as onboarding new hires were expected to reach productivity levels faster with depleted coaching support, inevitably resulting in a loss of effectiveness and further fueling the vicious cycle.

Consistent with Repenning and Stermann's (2001) 'Capability Trap', managers and supervisors prioritized working harder to achieve the desired performance goals set by senior management over spending time to improve learning and process capability which comes with a considerable delay in reaping the benefits. In keeping with their supervisors' expectations, shop floor employees responded by intensifying work effort at the expense of "working better" which would require allocating additional resources to training and coaching as well as stopping to identify and fix problems. By way of illustration, since operational and financial performance metrics measure numbers rather than the quality of work, targets may be reached at the expense of mispickings or damaged goods or HR-based cost cuts result in underperformance related to higher turnover and lower morale levels.

As a result, the development of learning and process improvement capabilities receives little real attention in both firms. This perpetuates the negative circle as more work is needed to solve the increasing number of problems generated by the lack of investment in improved capabilities (Repenning and Stermann, 2001, 2002).

Although both firms suffered from the capability trap, only APEX management was aware of the vicious circle, but claimed their hands were tied as the client had drained their operations of coaching capabilities and financial incentives. Moreover, client-enforced KPIs and REs were deemed unrealistic, forcing an emphasis on working harder and, thereby, preventing improvement undertakings from getting off the ground. In contrast, ORION management appeared less concerned about the negative circles and more inclined to blame workers for not achieving performance goals rather than the structure of the process itself (Carroll et al., 1997; Repenning, 2001). They were also more prone to reward heroic firefighting efforts than APEX.

The challenges of understanding and managing complex systems, another concern of system dynamics, is also observed in the study. System dynamics researchers suggest that at the core of managers' prioritization dilemma is their difficulty in understanding and managing complex systems (Senge 1990a; Sterman, 2001; Repenning, 2001). According to Sterman (2000), "the complexity of the real world dwarfs our cognitive capabilities" (p. 26). This is attributed to our "limited, internally inconsistent, and unreliable" mental models (Sterman, 2001, p. 10) which interfere with our appreciation of complexity and lead us to make deficient, short-term oriented decisions. This view is consistent with the principle of 'bounded rationality' coined by Herbert Simon (1957) which suggests that individuals' decision-making is limited by the available information, the tractability of the decision problem, the cognitive limitations of their minds, and the time available to make the decision.

Despite rationalization efforts, Fawcett et al. (2008b) add that managers seldom possess the knowledge to distinguish necessary complexity from counterproductive complexity. This can result in losing confidence in where to begin, being overwhelmed by the complexity of the tasks, and lacking the necessary resources to move forward. The consequences can be twofold: a) managers' tendency to seek immediate short-term gains without consideration for the long-term consequences (Stata, 1989; Senge 1990a; Sterman, 2001; Repenning, 2001; Kruger, 2015; Lyneis and Sterman, 2016); and b) managers' insufficient ability to perceive the impact of routine decision-making on the organization as a whole (Stata, 1989).

These effects are clearly observed in the studied firms, such as when immediate operational challenges are time and again prioritized over long-term performance or when workers adapt logistics plans to better meet their targets without considering the negative ramifications for the following shift.

Managing complexity also entails that the outcomes of a given action across the organization is difficult to predict (Schrageheim, 1999). Since firms can be perceived as giant networks of interconnected nodes, changes that aim to improve performance in one part of the organization can negatively affect other parts of the organization, becoming counterproductive to the system as a whole (Stata, 1989). For instance, in the name of better serving their clients, customer service at APEX (orchestrating client) and ORION (customer service department) disrupt floor operations by provoking daily changes in the floor plan to attend to customer varying needs. This disarray habitually occurs with order changes and rush orders requested by large clients and accepted by ORION's customer service department and daily plan changes to replenish changing store needs driven directly by APEX's sole client.

As changes generally take place without previous consultation with floor managers, operational supervisors and lead hands need to constantly alter floor plans and reallocate personnel accordingly, with implications of efficiency loss (time moving staff from one station to another), interference with learning (process internalization), and additional stress-generating workload pressure. It also typically affects KPIs as changes divert the focus from achieving set targets, reduces quality control, and raises operational costs.

Given that complex and dynamic distribution center environments are characterized by a significant number of interactions between people and departments, cause and effect relationships are not easily identified (Senge, 1990a; Schrageheim, 1999). Consistent with this proposition, on occasions where additional work pressure was applied to boost KPIs, managers at APEX and ORION could not clearly establish how much of the resulting rise in performance was due to stepping up labor-intensive efficiency on the shop floor and how

much resulted from cutting back on training, coaching and improvement activities to make for additional time to work more.

Connected to the above, because managers could not fully observe the reduction in learning and improvement efforts (long delay), they tended to overestimate the positive results in the 'work harder' push forward (short delay). Hence, the source of deficient performance effectiveness was typically attributed to workforce-, rather than process-based causes. As this assumption was confirmed in the mind of managers, more aggressive operational targets were set and pressure intensified at the cost of eroding resources to build capability.

From a systems thinking lens, the problem lies in that in complex systems people typically assume that cause and effect are closely connected in time and space (Senge, 1990a; Sterman, 2000). Hence, "to explain a puzzling event", Repenning and Sterman (2001) observe, "we look for another recent, nearby event that might have triggered it" (p. 76). Another problem is that people also tend to fall into reductionism, attributing simplistic causal attributions to events (Senge, 1990a; Repenning and Sterman, 2001).

Causal attributions closely related in time and space were observed in both cases. For instance, while APEX and ORION operational staff blamed limited time for learning and improvements on customer service-driven disruptions and decreasing coaching capabilities, management pinned it on unrealistic targets set by the orchestrating client (APEX) and workers' low productivity (ORION) which didn't leave time for anything else.

These two case studies also portray the dominance of decision-making that prioritizes short-term operational and profit-based results at the expense of longer-term development of process capabilities. Downsizing decisions in APEX and ORION include reducing the number of trainers in favour of shop floor worker roles to diminish costs and add firefighting power to daily demands. Consequently, after formal training and initial coaching, new hires need to rely partially on informal coaching support provided by co-workers. This often leads to performance inconsistencies as learning is transferred from multiple colleagues providing dissimilar and sometimes conflicting guidelines (situation aggravated at ORION due to a

lack of proper standard operating procedures). In addition, supervisors in both firms report that deficient coaching capabilities result in an increase in turnover rates on loss of morale grounds (APEX) or underperformance which leads to lay-offs (ORION). It also generates a feeling of dissatisfaction in team members engaged in informal coaching who feel they should be financially recognized for duties not outlined in their job descriptions (APEX).

Decision-making tending to seek immediate short-term gains without consideration for the long-term consequences (Stata, 1989; Kruger, 2015; Lyneis and Sterman, 2016) was also observed with respect to process improvement initiatives in the case studies. Process improvement efforts are much valued conceptually and they are part of a strong narrative in both firms, especially at the management and supervisory levels. However, in the day-to-day reality, these same employees recognize process improvement undertakings drain much needed fire-fighting resources and hurt cost-savings by demanding additional workers/ workload to compensate for 'lost time'. The problem lies in that process improvement requires 'stopping to review and correct' and pay-offs will only be reaped sometime in the future (Rahmandad et al., 2009). More tangibly, firms are concerned with getting their employees to follow existing procedures, whether predominantly experiential and process sheet-based (ORION) or SOP-based (APEX). This, in a context where new hires must 'learn the ropes' ever more quickly to fill operational holes, cut the cost of productivity ramp-up, and allow understaffed lead hands to strike a better balance between coaching and floor task coordination.

Thus, in practical terms, both time- and resources-starved 3PLs allocate more energy to consolidating existing processes to address more immediate needs, than investing in long-term improvement of processes with less tangible and uncertain results (Govindarajan and Trimble, 2010). Exceptions occur when process improvement is expressly requested by clients or when it is expected to generate short-term profit gains.

The discussion has revolved around the application of the system dynamics theory in the case studies up to this point through the use of influence diagrams (IDs) and by linking the findings to constructs and principles stemming from system dynamics theorists such as

complex systems, causal attributions, time delays, and short-term orientation. At the heart of the system dynamics approach, systems thinking capabilities (Senge, 1990a), related to understanding the broad picture of complex interconnected systems, are presented by system dynamics authors as critical for organizational effectiveness. This implies focusing on essential trends and forces of change, rather than on day-to-day events resulting in people pushing on symptoms and not eliminating the underlying causes (Senge, 1990a; Senge, 1990b).

According to Sterman (2002), it is challenging to get people to see themselves as part of a larger system in a way that empowers them, rather reinforcing the belief of helplessness. However, the results of this investigation raise the question of whether 3PL employees are not observing the organization as a “whole” because they are unable to, or it is just simply not of value to them. From top management to boots-on-the-ground operational workers, chasing KPIs and taking on operational hole-patching seems to be all that matters.

Putting systems thinking to work to improve the health of the system was not found to be of much interest to the interviewees with few exceptions. Essentially, imperfections appeared to be tolerable for the 3PL managers and supervisors as long as the system “worked”. For instance, there was a sense that even if employees left the firm owing to vicious cycles in the system, there will be others to take their place; inaccurate loads due to B/L and PO discrepancies will end up being fixed with the client; or lost pallets due to improper radio frequency (RF) scanner use will eventually be found. In the end, the system was perceived to be sufficiently resilient and adapt itself to any current challenge, despite its flaws.

Complementing the systems analysis described in the first part of this section, agency theory was used as a helpful analytical tool for understanding principal-agent relationships. Particular attention was given to human factors that influence the behaviour of the system and the effectiveness of learning and improvement undertakings.

Agency-related issues were first raised in section 5.2 through a QPID approach aiming to identify the roles and motivations of actors wielding control over causal links between



components of the studied systems. This technique also examined how power and influence spread across these dynamic systems affected the overall interests of principals and agents.

The QPID analysis uncovered the tension among decision-makers around operational and financial performance issues, where the client (APEX) and new management (ORION) tend to prevail over top management and old management, respectively. Performance, financial and customer-based decisions made by key decision-makers and permeating down through layers of management, supervisors and support-level operational staff are forced down without much consultation. Operational supervisors and lead hands are compelled to follow strategic directives with limited say and without rocking the boat too much. They are also torn with the dilemma of pressing hard for productivity targets and seeing shop floor workers' morale drop and turnover levels rise, on the other hand, creating a new set of problems. Support-level operational staff are precluded from using their discretion in their daily tasks and see limited career opportunities. They can do little but perform as expected to achieve financial rewards (ORION) or get a good pat on the back (APEX). Alternatively, they can adopt a negative stance and drop productivity and/or leave the firm, with considerable performance and HR repercussions.

Agency theory revolves around the notion that the principal and agent engage in cooperative behaviour, but have conflicting goals and different disposition to risk (Eisenhardt, 1989; Jensen and Meckling, 1976). The principal attempts to restrict deviations from his/ her interest by providing the agent with incentives and by adopting monitoring mechanisms (Jensen and Meckling, 1976).

Table 9 below applies categories and constructs adapted from Eisenhardt (1989), Zsidisin and Ellram (2003), and Tate et al. (2010) to the case studies. The table lays out assumptions about the *individual* (self-interest, bounded rationality, risk aversion), *organizations* (goal conflicts and monitoring and bonding), and *information* (information asymmetry) in the 3PLs. It also considers problems addressed by the theory involving *moral hazard*, *adverse selection*, and *risk-sharing*, in particular where divergent goals and risk preferences are exposed.

Table 9 – Agency theory application

Assumptions		APEX				ORION			
		Inter-firm		Intra-firm		Inter-firm		Intra-firm	
		Client (Principal)	3PL management (agent)	3PL management (Principal)	Operational staff (agent)	Clients (Principal)	3PL management (agent)	3PL management (Principal)	Operational staff (agent)
Individual	Self-interest	Focus on flexible store replenishment needs and cost-reduction	Focus on managing client's needs, while running operations effectively and keeping staff safe and motivated	Focus on operational effectiveness and staff motivation to maximize efficiency and reduce turnover	Focus on career mobility and cross-training for personal development	Focus on flexible store replenishment needs	Focus on managing client's needs, while running FIFO efficiently and meeting HACCP targets	Focus on operational efficiency, restructuring (cost-reduction oriented), and setting up a rewards system.	Focus on financial rewards
	Bounded rationality	Insufficient understanding of or interest in the 3PL operational and HR challenges	Poor predictability of changing client demands	Deficient information on employee commitment and efficiency	Limited information on workload and career mobility	Insufficient understanding of or interest in the 3PL operational and HR challenges	Poor predictability of changing client demands	Incomplete information on employee accountability	Limited information on career mobility and operational procedures
	Risk aversion	Preference over short-term financial and operational gains	Contract ambiguity and changing floor plans affect their bottom-line	Preference over short-term financial and operational gains	Systems-thinking, collaborative behaviour, and PI seen as a risk to meeting individual performance targets	Preference over short-term financial and operational gains	Changing floor plans	Preference over short-term financial and operational gains	Benefit in providing and implementing PI ideas not clearly rewarded
Organizational	Goal conflict	a) Expect effectiveness at the lowest cost  b) Changing operational plans to prioritize store replenishment needs	a) Achieve effectiveness, while nurturing performance and morale  b) Manage disruptive effects of constantly changing logistics plans	Expect performance and commitment through soft incentives (recognition, work environment and card program)	Seek financial incentives and career mobility	Changing operational plans to prioritize customer replenishment needs	Manage disruptive effects of rush orders	Expect performance through productivity sheets and financial rewards	Seek career mobility and better salary top-out
	Control mechanisms (Monitoring and bonding)	Active budget and HR control. Monitoring through KPI and RE targets and SOP audits	Strive to gain more budget and HR control. Renegotiate metrics affected by client-driven operational changes	a) Reduce moral hazard through recognition and positive work environment  b) Monitoring through KPI and by enforcing SOPs. Write-ups are used to sanction workers	Recognition and work environment valued, but less than potential financial reward.	Monitoring through KPI targets (esp. 'correctness', focusing on errors and damaged goods)	Strive to gain more operational control. Reduce client-driven operational alterations by negotiating change fees	Moral hazard reduced through productivity sheets and performance bonus	Productivity sheets annoying unless tied to performance bonus

Adapted from Eisenhardt, 1989; Zsidisin and Ellram, 2003, and Tate et al. 2010

The table illustrates examples of agency assumptions at *individual* and *organizational* levels which were identified in the case studies. To begin with, it is assumed that individuals are motivated by *self-interest*. This leads the agent to behave with opportunism and, as a result, not act in the best interests of the principal (Bergen et al., 1992; Jensen and Meckling, 1976). To reduce the agent's self-seeking behaviour, the principal (client(s) and 3PL management) at APEX and ORION established *monitoring and control mechanisms* by collecting information on the performance of the agent (3PL management and operational staff) through KPIs, SOP compliance, and performance reports.

However, performance metrics were not always precise in evaluating productivity fairly. In the case studies, although the principal is willing to provide incentives to spur performance using pre-set metrics and the agent was inclined to accept these incentives, outcomes were also determined by complex and unexpected events that were difficult to predict and measure. Forced to rely on imprecise information, the connection between effort and productivity was thereby difficult to establish by the principal due to *bounded rationality* (Simon, 1957) issues, leaving the agent at the mercy of the principal's interpretation.

With that said, it was still clear in the study that these outcome-based controls helped make the agent more inclined to behave in the interest of the principal (Eisenhardt, 1989) and helped mitigate *moral hazard* situations, such as shop floor staff not putting sufficient effort to complete tasks. On the flip side, it also led to motivating employees to self-interestedly achieve targets at the expense of creating new problems for the future. Examples of this are when pickers, seeking to save time as they are picking items from rack locations, placed cases with cake at the bottom of a pallet and stack heavier cases on top (potentially crushing cakes after rocking and bouncing in the truck), resulting in costly claims for the 3PLs; or when night shift lead hands, eager to meet their targets, allowed inbound trucks to keep unloading freight on docks already completely full of outbound pallets, creating a handling problem for the day shift operators.

Although *Bonding mechanisms* that rewarded the agent with monetary (ORION) and non-monetary (APEX) incentives were relatively successful in keeping efficiency at acceptable levels within functions, they were, nonetheless, insufficient to keep errors and mistakes from happening regularly. This was attributed to a scarcity of adequate resources and unreasonable time pressures to do the job, as well as to the absence of proper measurement tools which resulted in *information asymmetry* and, consequently, reduced accountability as it was often difficult to establish which individual or shift was to be held responsible.

At the cross-functional level, the lack of incentives rewarding coordinated actions at the 3PLs arguably kept operational supervisors and lead hands responding to their own functional interests (Kouvelis and Lariviere, 2000). In this scenario, there was *risk aversion* to collaborate beyond their turf as the certain reward coming from meeting their KPIs was preferred over the riskier reward of losing some measurable performance to possibly be recognized for acting for the greater good.

Principal's *risk aversion* was observed relative to contract ambiguity (APEX only), changing floor plans, and in the preference of short-term financial and operational results over longer-term investments in HR development and process improvement activities. Operational staff (agent) in both firms were risk-averse with process improvement development and implementation. Since there was no process improvement-specific reward system in place, such initiatives were mostly seen as a distraction or interference to achieving performance metrics. Hence, trust-based views such as "identification with the firm" as a stimulus for continuous improvement (Lee, 2004) did not apply to the case studies as conditions were such that the improvement of processes was viewed more like a menace than a gain.

### 6.3 Observations on improvement of processes in 3PL environments

Process improvement involves analyzing current processes and identifying potential improvements. Alternative processes then need to be designed, tested, approved, implemented and followed up on. Arguably, the last two phases are the most challenging ones since they involve coaching and managing people issues as the new processes are

being learned, internalized and effectively put into practice across the firm or specific functions. This consumes precious time and resources and demands change management capabilities (Garvin, 1993).

In the studied firms, cost-reduction decisions and client-based operational disturbances negatively impact organizational learning/ process improvement design and implementation capabilities and the motivation to become engaged in such initiatives. Profit-driven targets mainly centering on workforce ramify into a series of consequences. In particular, three elements interact in a mutually interdependent manner: morale, performance and coaching capabilities.

Adding to dispiriting factors natural to 3PL service providers, such as limited career development options and the strenuous physical activity faced by shop floor workers, HR depletion increases work pressure while eroding coaching capabilities. This affects performance negatively (lower CPH metrics and more mistakes) and increases job dissatisfaction, giving rise to higher turnover rates. Since new hires can take weeks to achieve expected productivity levels and insufficient coaching leads to learning deficiencies and dissimilarities, performance is further impacted. Given that top management will typically respond by putting additional pressure to achieve KPIs, work pressure will tend to increase and morale drop, eating away resources and fueling the vicious circle. The problem is aggravated as customer-driven changes generate cross-functional friction, disrupt operational plans, and tighten time constraints even further.

Under such circumstances, learning tends to be more directed towards streamlining the execution of processes, rather than their improvement. Management is more focused on short-term operational efficiency to keep operations running and clients satisfied. They also show considerable interest in keeping KPIs at the highest level possible, with a special value given to broader metrics such as revenue per employee, packs shipped out, and processed trailers.

Employee-specific measurements such as cases-per-hour (CPH) are mainly used to monitor workers' performance. They must be achieved regardless of changing operational circumstances which normally result in variability of work, or risk being fired. Yet, management did not appear to be overly concerned with practical operational improvements such as reducing the number of steps (times a case or a pallet is handled by a worker before being shipped out) or managing difficult-to-unload trailers. Such process improvement initiatives are valued by operational staff as they can help with the achievement of demanding metrics. Any other forms of improvement of processes, not directly related to their tasks or safety practices, are thought to take up valuable time from achieving their targets.

In sum, the concrete and immediate consequences of failing customers and hurting profitability clearly matter and have indirect knock-off effects on learning and process improvement. The former typically results in operational disruptions as the 3PLs is compelled to accommodate to clients' changing needs; the latter is concerned with reducing costs which mostly translates to cutting jobs (ORION) and exchanging trainer or lead hand roles for the cheaper order selector or forklift operator roles (ORION and APEX). Consequently, when process improvement does take place, it is mainly triggered by an urge to keep clients satisfied and reduce operating expenses, rather than stemming from the encouragement of workers to analyze work routines and generate process improvement ideas bottom-up.

## CHAPTER 7: Conclusion

In supply chain industry forums and events throughout Canada, 3PL executives predicate that process improvement strategies and practices are essential to secure long-term competitiveness. This is particularly relevant considering the complex, fast-paced, and time-sensitive supply chain environments in which they operate, in constant need of improving processes to survive. Research conducted on logistics service providers found similar affirmations made by managers on the value of logistics innovations, including new process development (Flint et al., 2005).

In actual practice, and despite the rhetoric surrounding organizational learning and process improvement programs and undertakings, this study shows that short-term day-to-day immediacies of issues surrounding staffing, stocking, scheduling, and customer demands, among others, seemingly requiring urgent attention and with performance metrics implications, often prevail over medium and longer-term, less tangible and more difficult to measure process improvement and broader organizational learning objectives. In other words, in the constant tug-of-war between immediate and often overwhelming performance demands (primarily cost-saving and operations-based) and organizational learning/ process improvement initiatives, the former priority habitually outweighs the latter.

Exceptions to the above proposition are when process improvement is expressly requested by clients or when the improvement of processes leads to reducing costs. As such, process improvement tended to be reactive and *ad hoc* at the case study firms, not part of consistent and structured programs or practices aiming at being permanently nurtured through management involvement and employee empowerment (Ward, 1994). The latter produce results with a considerable delay and require investment in time, mobilizing resources and demanding change management efforts to modify and adapt existing processes. This occurs in a context where heavy pressure is exerted on achieving short-term profitability and on meeting KPIs, all the while engaging in daily operational firefighting to accommodate to constantly changing customer needs.

## 7.1 Contribution to literature

This study contributes to the current literature on OL and PI by exploring the challenges of developing and executing PI initiatives in dynamic and complex 3PL settings. Although a considerable amount of literature has been published on PI in supply chain settings and its relevance to stay competitive highlighted by industry and scholars alike, limited research has actually been directed at exploring existing PI practices in 3PL service providers. Further, an even scantier amount of literature focuses on outsourced distribution center services, lacking a fine-grained understanding of learning and PI challenges faced by these firms.

The investigation also covers some of the gaps identified in the literature review. Firstly, it examines the little studied impact of operational and cost pressures (internal and external) on learning and improvement initiatives. This includes exploring the effects of performance metrics set by both the 3PL and the client. Secondly, this study shed light on why and to what extent process improvement activities succeed in 3PL contexts. Lastly, the impact of intra- and inter-firm (3PI-client) power dynamics, absent in the published material reviewed, was also examined from the 3PL standpoint.

An organizational perspective approach was adopted to allow for a broader contextual view. This lens, not found in the literature applied to the phenomenon under study, was useful to permit deeper insights into the interrelated and interdependent forces that operate for or against the realization of learning and improvement initiatives. This was achieved by examining the 3PLs across different levels of hierarchies and roles, ensuring multiple voices were heard in order to reach a balanced understanding of the complex and dynamic operational and workplace reality.

Hence, this research offers unique insights into operational, performance measurement, and HR-related challenges, as well as the impact of prioritization and decision-making across different functions and organizations in client-3PL relations. These topics together set the



stage to understand under what conditions and how process improvement capabilities may be enabled or constrained over time at 3PL firms specializing in distribution center services.

The study also contributed to literature by applying the QPID tool to previously unexplored 3PL environments, providing insights into the analytical usefulness of this tool to uncover influence and power forces behind complex and dynamic cause-effect relations in supply chain scenarios. Being a tool of collaborative co-production of knowledge, the QPID workshops served as an effective form of *engaged scholarship*, where practitioner and academic perspectives were able to work together to answer questions that are grounded on real-life contexts, helping bridge the gap between theory and practice. As such, besides allowing for a “multidimensional advance of knowledge” (Van de Van, 2011 p. 45), supply chain practitioners can also be encouraged to evaluate, test and use the resulting research findings in the real world.

#### 7.1.1 Process Improvement and Implementation

This thesis explores the challenge of implementing process improvement in rapidly changing environments involving 3PL firms. It reflects the work of Repenning and Sterman (2001 p. 65) where in order for the firm to overcome what they term the ‘improvement paradox’ they must not only *identify and learn* about appropriate methods but develop the capability for successful *implementation* from within. Yet, such capability is not developed easily and typically requires commitment to lasting change sustained over prolonged periods of time, during which organizational learning may occur only if provided with sufficient resources and time to experiment, appropriate managerial mind-sets, and accompanied by a dynamic world view perspective.

There is considerable danger of firms that lack such perspective, or see little value in process improvement, falling into a ‘capability trap’ (Lynies and Sterman, 2016), whereby simply working harder does not achieve the desired outcome. All too often, and as seen first-hand during this research, managers’ fixation in solving problems as they appear and achieving

short-term cost-cutting gains feeds 'vicious circles' (Senge, 1990a) of low morale and high levels of worker turnover which frustrates attempts towards lasting improvements at the firm.

These improvements are especially relevant for 3PLs operating deep in supply chain networks and in permanent need of incremental and innovative processes to fine-tune the time-sensitive exchange of goods, people, services, and technologies. At the same time, the very fast-paced nature of 3PL activities has also shown to work as a barrier to get process improvement off the ground as it drains time and focus away from identifying deficient processes and implementing improvement solutions. And, in practical terms, the improvement of processes was perceived as a) competing with more immediate firefighting needs (Repenning and Sterman, 2001); b) distracting employees from achieving performance targets; and c) requiring resolute management commitment to additional human and financial resources (Mutafelija and Stromberg, 2003).

In evaluating more broadly the barriers to learning and improvement initiatives in 3PL contexts, this study showed the high impact of managerial factors in enabling or inhibiting such activities. Management's pressure to achieve short-term operational and financial results leads to prioritizing efforts and resource allocation (including rewards and recognition) in this direction with consequences branching out. As management attempts to strike a difficult balance between three competing goals simultaneously – maximizing operational efficiency, reducing HR costs, and satisfying customers – the improvement of work processes is mostly relegated to a secondary place. Barriers intrinsically interconnected, such as low morale, high turnover levels, deficient coaching, work pressure, scant professional growth, and lack of process improvement-specific rewards, are arguably a direct consequence of this management-driven prioritization.

Other barriers that were identified were poor cross-functional integration (e.g. customer service versus shop floor; day versus night shift) and one-sided client order change/ rush order and process improvement requests. The latter may add more routines and don't necessary help the 3PLs increase their own work process efficiency. These are pointed out

as impediments in that they further tighten precious time and resources that could, in theory, be allocated to the improvement of processes. In such an environment, employees were wired to view these undertakings as hurting cost-savings (management), draining resources to address immediate needs (management and supervisors), affecting KPIs (management, supervisors and shop floor staff), and creating additional workload (shop floor staff).

At the root of the problem, this research found that the greatest barrier is debatably the greatly imbalanced nature of client-3PL relationships and how the service providers respond internally. As clients use their power to exert price and operational pressure, 3PLs tend to pass this pressure on to their operational units, constraining time and resources that could possibly be directed to the improvement of work routines.

#### 7.1.2 Taking a systems and agency perspective

This research's study of two 3PL firms and their supply chains finds many examples where decisions by managers are having unintended effects on other areas of the business (Stata, 1989). This is partly due to a lack of appreciation or even awareness for the bigger picture or systems perspective (Senge, 1990a; Kruger, 2015). Hence, 3PL firms operating in complex environments must go beyond understanding problems in terms of just human resources or leadership, instead understanding that it is the *interaction* of tools, equipment, workers and management combined which determines sustainable, long-term success.

Taking a systems perspective (e.g. Senge, 1990a) therefore not only enabled the investigator to gain a comprehensive view of 3PL supply chains such as the relationship with clients and suppliers but provided insights into the power dynamics of individual stakeholder groups when using an agent-based, politicized lens (Powell and Coyle, 2005; Howard et al., 2007). This led to discoveries from the research such as:

a) the power of clients, capable of imposing their changing needs on management and customer service, while oblivious to the impact on operations and then penalizing the 3PL for underperforming;

b) supervisors' quandary, forced to juggle between accepting top-down and/ or externally driven performance targets with barely enough resources and turning up the workload and productivity pressure on workers, while safeguarding morale and retention; and

c) support-level operational staff, who are pressed to "learn the ropes" and achieve peak levels of productivity in the shortest time possible, can respond by performing less effectively and being fired for poor metrics or leaving the firm on low morale, stress, and/or exhaustion grounds.

Adding an agency perspective enabled the investigator to go beyond merely studying the behaviour of actors or stakeholders in isolation (Frooman, 1999; Robb, 2007). This allowed an understanding of the specific agendas, motivations and interests of employees at different levels within the 3PL in relation to the power dynamics that may be present in the wider environment and in particular within and between other firms.

### 7.1.3 Structure and the position of 3PL

The two 3PL service providers investigated have distinct structural configurations and manage their resources differently. APEX offers dry distribution center management services for a single client where the 3PL management operates from client-owned facility and their work is strongly conditioned by operational and budgetary parameters laid out by this single client. In contrast, ORION provides multi-temperature distribution services to a large number of clients and run their own facility with relative operational and budgetary decision-making independence from its corporate headquarters.

However, irrespective of their unique structures and access to and control over resources, the research found that the position of 3PLs (i.e. between the supplier and the client) means supporting the needs of adjacent and often competing or conflicting stakeholders makes it a difficult environment for process improvement to take place at 3PL firms. This is particularly the case for lean improvement activities which although are intended as supply chain-wide

programs, often are only implemented piecemeal because of intra- and inter-organizational dissonance thus compromising their effectiveness.

Much has been said about the role of 3PL providers in facilitating supply chain integration, especially in a context of high supply complexity (Gimenez et al., 2012), by providing customized logistics services to clients (Ying and Dayong, 2005; Bolumole et al., 2007; Jarayam and Tan, 2010) seeking to contract-out such services to enable them to focus on their core business activities (Selviaridis and Spring, 2007). To attain this end, it was argued to be indispensable for 3PL providers to engage in internal and external integration of processes through learning and improvement undertakings (Flint et al., 2005; Zhao et al., 2011). However, this study suggests that implementing such initiatives remains elusive and perhaps even unachievable due to the largely imbalanced nature of client-3PL relationships and how 3PLs respond internally.

At the root of the problem, although 3PLs are said to be central for supply chain integration and the importance of developing robust, long-term inter-firm partnerships highlighted (Knemeyer, 2003; Stank et al., 2003; Sinkovics and Roath, 2004), they are in practical terms treated very poorly by their clients. Rather than running joint efforts, clients exert their power to incessantly squeeze the service providers from many directions, mainly at cost-pressure and operational levels. In turn, the 3PLs respond by transferring this pressure down to their own operations, eroding resources and capabilities that could be potentially employed for the improvement of work routines.

#### 7.1.4 The dilemma in 3PL process improvement: what this means for organizational learning

Connected to the previous point, this research's final and perhaps most profound contribution speaks to the real-world difficulties in implementing process improvement in complex environments and the association with organizational learning. Whilst 'learning and continuous improvement' are often presented in the literature as a related or similarly linked phenomenon, where one often leads to another (see, for example, Bessant et al., 2003 p. 168), the findings from this study make a case for a different view.

First of all, for both case studies, there were considerable differences in the degree of success experienced by most improvement activity, with a significant proportion not getting off the ground. Of those that did, there was very little evidence of long-term learning actually taking place either within the organization or with supply chain partners. The findings also develop a picture that suggests that learning and process improvement are separated by considerable barriers or hurdles.

In the case studies, learning was exceedingly more oriented towards streamlining already existing processes. This was especially the case with support-level workers where learning was reduced to acquiring knowledge and skills to perform a set of fixed work routines in compliance with company norms and standards. In line with Bateson's (2000) 'zero learning', this type of learning involves internalizing processes and procedures related to a task or operation which "are not subject to correction by trial and error" (p. 287). Once instruction has been delivered (and signed by trainees in the case of standard operating procedures), these acts are carried out by repetition with minimal modifications. Training and coaching are designed to ensure standard work routines are being followed without wasting too much time in questioning them. Practice should lead to habituation, not change.

At another level, 'single-loop learning', involving incremental improvements to existing processes and procedures without changing established organizational norms and values (Argyris and Schön, 1978), was mostly observed at APEX and ORION as a response of intermittent client or cost-saving needs. This study found that this type of learning, leading to more sustainable process improvement (i.e. continuous improvement) and more associated to organizational learning, is largely overlooked by these organizations as it demands to allocate additional human resources (in direct collision with cost-reduction pressures) and steals time from already time-starved floor operations, hurting short-term bottom-line results. 'Double-loop learning', associated to making major strategic transformations to eliminate underlying causes of problems by challenging and altering the

structure of a system (Argyris and Schön, 1978), was not found to occur at all in the studied firms.

Secondly, from an exploration-exploitation standpoint (March, 1991), evidence from this study has shown that striking an ambidextrous balance between exploiting capabilities through incremental improvements in process routinization and standardization, while exploring new capabilities through learning and experimentation (Benner and Tushman, 2003; Teece et al., 1997) poses a considerable challenge in the two case study firms. Clearly, exploitation practices predominate in the 3PLs' daily activities. And, as previously noted, these exploitation efforts are primarily oriented towards the seemingly more productive activity of executing processes and procedures rather than re-evaluating their operational effectiveness.

Based on the above, this thesis argues that assumptions around process improvement activity in 3PLs specializing in outsourcing warehousing services need to be revisited. There is a clear disconnect in the manner that process improvement activity is by and large talked about in the industry and how it is actually valued, prioritized and put into effect within a 3PL. In fact, during the interviewing process, the investigator needed to permanently prompt most participants to talk about process improvement and remain on track as the conversation often strayed to other more contextual issues. Hence, while the importance of process improvement is recognized by industry leaders, there was little evidence of process improvement activity in practice.

In some respects, it may be suggested that 3PL service providers find themselves caught between the rock and a hard place. This study has illustrated how 3PL management imposes strong top-down pressure internally to achieve financial and operational performance. In turn, as previously mentioned, the external pressure suffered by these firms is arguably the underlying cause, as clients with a strong negotiation position press for accurate, well-timed and flexible warehousing services, while at the same time squeeze margins by keeping budgets or prices at low levels.

## 7.2 Recommendation for practitioners

This study confirms the results previously observed by MIT scholars on the tendency of employees to favour decisions with immediate response to the environment or concrete rewards over results that will payoff in the future. In line with this, Marsick and Watkins (1999b) identify two different organizational mindsets: one which holds learning and knowledge development at its core; the other where short-term efficiency and profitability prevails. Repenning and Sterman (2001) argue that the latter mindset comes out on top in most organizations, as last-minute problem solving is often more valued and better rewarded than the implementation of learning, training, and improvement activities. This short-term efficiency at the expense of developing new competencies is a form of corporate myopia likely to become self-destructive in the long-run (March, 1991; Levinthal and March, 1993). Put differently, when long-term improvement initiatives suffer cuts in favour of producing more and putting out fires, process capability gradually declines and, ultimately, performance is affected (Repenning and Sterman, 2001).

Alternatively, firms can interpret a performance gap as a sign of deficiency in capabilities and prioritize learning and process improvement by allocating resources (Lyneis and Sterman, 2016). This requires decision-makers to forgo quick payoffs and take a hit in operational and financial performance for a period of time (Leuschner et al., 2013). As a result, they will tend to experience rising performance and workers have more time to devote to improving capabilities, further supporting a virtuous circle. In such organizations, leadership often worked to further strengthen improvement by reinvesting resources freed up by productivity gains. By 'working smarter' these organizations spend less time on heroic efforts to solve problems by 'working harder'.

Although time-pressure may be portrayed as the great villain, evidence in this study suggests that time constraints in fast-moving 3PL operations are aggravated by decision-making involving human resources and cross-functional misalignments. HR-based decisions include decisions to lower costs by keeping headcount at a minimum level, which creates performance pressures when there is a sudden and unexpected fulfillment spike. In



addition, reducing trainer roles for the same cost-cutting reason leads to a loss of operational effectiveness which often results in additional time consumed in rework, finding lost pallets or compiling reports on damaged products. Customer service-based decisions to accept client requests (e.g. holding on to stocks or same-day rush orders), without consideration for the resulting additional work on floor operations, further puts a strain on the already tight time availability.

For all the claimed stress given by 3PL executives on proactive design and implementation of process improvement endeavors with bottom-up involvement, there is little evidence they actually set up the necessary conditions for this to happen. And, even when it does, improvement in work processes tend to be more reactive, *ad hoc*, and client- or financially-driven in nature.

An important implication is that any 3PL management team claiming to value continuous learning and improvement will need to hold a strong grip and focus on these objectives even if they will come with a temporal delay. This includes combating the compelling temptation to only focus on the palpable financial and operational returns gained from cutting costs and responding to immediate operational needs. Sustained process improvement becomes difficult to nurture unless dedicated time and rewards are allocated for employees to examine, propose, and become engaged in process improvement initiatives (Emery, 2009)

Managers must also be careful in ensuring that the very efforts to reduce costs or retain clients will not backfire. For instance, while cutting costs in headcount and certain activities such as training and coaching may boost the revenue per employee (RPE) ratio by reducing slack time and focusing more on 'getting things done', it can also lead to additional costs associated with not 'getting things done right' such as worker burnout, injuries, and low motivation (HR costs), damaged goods and excessive number of touches (operational costs), and improper cycle counting (inventory costs).

In the spirit of satisfying and retaining certain clients, customer service's acceptance of unplanned order changes or rush orders may spill over into other problems. For example,

when rushing to communicate and implement a new logistics plan, order selectors are prone to more mistakes such as freight improperly staked or secured, freezable products loaded onto non-heated trailers, or goods left to expire. These mistakes affect the overall quality of the service, hurting the very customer satisfaction the 3PL sets out to improve by allowing the requested changes to be incorporated into the routines.

In a general sense, 3PLs are faced with the difficult task of striking a balance between maximizing efficiency, reducing costs and increasing customer service levels. Considering these goals often conflict with one another, managers need to clearly recognize and identify the trade-offs involved. For instance, a decision to offer improved customer service will generally bring on higher costs, affecting cost-reduction efforts. To compensate, management may try to deepen their cost-cutting measures by reducing headcount, negatively affecting operational effectiveness and the very customer service level they strive to achieve.

Although opting for trade-offs is never an easy task, 3PL managers must seek to understand the forces impacting performance from a broader system-wide lens. In doing so, they may evaluate where costs can be cut without undermining operational effectiveness and customer service at the same time. Special care should be taken to ensure cost-cutting does not erode human capital and improvement capabilities. All too typically, the same executives that refer to their employees and improvement initiatives as “fundamental assets”, treat these very assets as a cost-cutting opportunity.

From a strictly cost standpoint, a view of operations in its entirety will also enable these managers to visualize the combined benefits – both financial and non-financial – resulting from employee retention (e.g. lower recruitment, training and on-boarding costs, and higher productivity) and the improvement of processes (e.g. increased efficiency, greater flexibility, and higher service levels). If a decision is made to move in this direction, new metrics should be developed to show management commitment and track progress.

To further reduce costs and take a firm step toward integrating and improving processes, function-specific performance metrics should be revisited and adapted to ensure corporate and functional goals are properly aligned and costly and inefficient cross-functional asymmetries minimized. But, ultimately, the success of the above recommendations will be contingent on managers' awareness, willingness, and readiness to challenge the prevailing short-term paradigm in 3PL organizations.

While many scholars recognize that supply network members need first to work on their own internal processes before venturing into cross-functional collaboration with other firms (Stank et al., 2001; Zhao et al., 2011), 3PL firms could also look into the ideas of 'collaborative improvement' (Col) (Cagliano et al., 2005) suggesting that inter-firm collaboration is needed for learning and improvement processes to be truly effective. This lies in contrast with the restricted one-sided client-3PL improvement initiatives observed in this study, partly resulting from power imbalances between clients and the 3PL provider, raising the question of whether Col requires working towards real partnerships where collaboration is valued, implemented, and rewarded or, at the very least, joint efforts are conducive to more symmetrical power relations between firms.

### 7.3 Strengths and limitations

This thesis has some limitations that need to be acknowledged. First, the scope of the study was confined to third-party logistics providers offering warehouse/distribution-based services in Canada. To look at 3PL firms more comprehensively, the scope would need to be extended to a broader range of 3PL providers, including transportation, cross-docking, freight-forwarding, and inventory management services, operating at different levels of vertical integration.

Secondly, this research was based on two case studies, demanding care in drawing generalizable conclusions as they don't represent the entire population (Merriam, 2009; Voss et al., 2002). It is important to note, however, that similar patterns emerged in both

cases even though they operate in different structural models with differing number of clients and relations to the group from where management/ resource decisions are made.

Also, rather than numerical, this study aims at reaching analytical generalizations. According to Yin (2013), these generalizations find their empirical foundation from the “close-up, in-depth study of a specific case in its real-world context” (p. 327). In other words, while it is not proposed that the two case studies should adequately reflect the complete pool of 3PL organizations, the aim here was to conduct a thorough analysis of the results to understand and articulate patterns and linkages of theoretical importance (Remenyi et al., 1998; Amaratunga and Baldry, 2001). Generalizability limitations were thereby counteracted by the in-depth and contextual nature of insights and the use of complementary analytical platforms (Yin, 2013).

Finally, this study was limited to 3PL employees’ perspective and did not capture the view of external members of the supply chain (e.g. client(s) and trucking firms). By interviewing employees working for clients and inviting them to participate in collective inquiry workshops, a better understanding of inter-firm power dynamics could be gained. It would also allow to cross-check cause-effect relations brought up by 3PL employees in this study and explore a broader range of issues that may enable or restrict learning and improvement initiatives. Lastly, insights could be gained into the actual level of relevance given by clients to process improvement activities. In sum, having multiple perspectives from a broader variety of organizational players would have provided a more holistic picture of the phenomena studied, delivering a more complete representation of the problem.

A strength of this study is that it extended previous work to include not just the views of managers, but also included different levels of employees within the 3PLs. This enabled a comprehensive range of views at the intra-organizational level, including the voice of operational supervisors and shop floor workers, reducing possible bias associated with managers’ over-appraisal of their firms’ capabilities (Larwood and Whittaker, 1977; Weber, 2001).

## 7.4 Further research

Additional investigative work is required to strengthen the external validation of the results of this thesis. This is especially relevant considering 3PLs offering distribution services vary in size, focus, and types of services. These organizations are also increasingly reshaping using different technologies, including warehouse management systems (WMS), radio frequency identification (RFID), robotics, and automation, with implications on cost-efficiency and workforce issues.

This research could also be extended to include the relation between process improvement and occupational health and safety (OH&S) in 3PL organizations. Although this investigation showed the case study 3PLs were mainly motivated in adopting process improvement undertakings concerned with bettering customer satisfaction and profitability, these organizations are known to take OH&S very seriously (Van Horne Institute, 2018). This involves emphasizing training, engaging employees, and monitoring OH&S practices through metrics to comply with regulation and achieve an injury-free and healthy work environment. However, since this study has not revealed any special attention directed by the case study firms to improving health and safety processes, further research must confirm to what extent this type of process improvement activity is prioritized in 3PL settings.

Another interesting point to investigate is whether additional HR resources and time, coupled with top-down support, would in actual fact be used for the purposes of improving processes. By investing more in human capital through better training, benefits, and work environment, it is assumed that the health of the system would be revitalized by virtue of greater productivity and lower turnover levels. This would, arguably, positively impact financial and operational performance, provided sufficient time is allowed for the results to surface. However, even so, 3PL firms may choose to concentrate these additional resources on standardizing and implementing existing processes and controls to reduce flaws, errors and hole-patching, as well as creating a more engaging and fulfilling workplace experience to

employees, rather than making work more effective by systematically revising and improving processes and practices across the firm over a prolonged period of time.

Future research could explore how activities of exploration and exploitation are actually split across supply chain networks spanning multiple suppliers, manufacturers, retailers, and 3PLs. In other words, look into the extent to which exploration/ exploitation practices are balanced within each member of the network or asymmetrically dispersed across the supply chain, and whether actors' structural configuration and role in the supply chain will reveal a proclivity towards exploring, exploiting or ambidexterity.

Lastly, and connected to the above, it might be interesting to investigate under what conditions customers using 3PL providers to outsource warehousing/ distribution center services may have a greater predisposition to nurture genuine collaborative partnerships beneficial to both firms and to the supply chain network as a whole. This may include circumstances involving different degrees of complexity (e.g. just-in-time requirements or number of outsourced services) and sharing of risks and rewards.

## References

- Agrell, P., Lindroth, R., and Norrman, A. (2004). "Risk, information and incentives in telecom supply chains". *International Journal of Production Economics*, Vol. 90(1), pp.1-16.
- Aguezzoul, A. (2014). "Third party logistics selection problem: a literature review on criteria and methods". *Omega*, Vol. 49, pp. 69-78.
- Abdullah, Z. and Musa, R. (2014). "The effect of trust and information sharing on relationship commitment in supply chain management". *Procedia – Social and Behavioural Science*, Vol. 130, pp. 266-272.
- Ahern, D. M., Clouse, A., and Turner, R. (2004). *CMMI Distilled: A Practical Introduction to Integrated Process Improvement*. Addison-Wesley Professional.
- Ahire, S. L., Golhar, D. Y., and Waller, M. A. (1996). "Development and validation of TQM implementation constructs". *Decision Sciences*, Vol. 27(1), pp. 23-56.
- Al-Mashari, M. and Zairi, M. (1999). "BPR implementation process: an analysis of key success and failure factors". *Business Process Management Journal*, Vol. 5(1), pp. 87-112.
- Alzamora Rumazo, C., Pryor, A., Ocampo Mendoza, F., Campos Villareal, J., Robledo, J. M., and Rodriguez Mercado, E. (2000). "Cleaner production in the chemical industry". *Water science and technology*, Vol. 42(5-6), pp. 1-7.
- Amaratunga, D. and Baldry, D. (2001). "Case study methodology as a means of theory building: performance measurement in facilities management organisations". *Work Study*, Vol. 50(3), pp. 95-105.
- Andersson, R., Eriksson, H., and Torstensson, H. (2006). "Similarities and differences between TQM, Six Sigma and Lean". *The TQM Magazine*, Vol. 18(3), pp. 282-296.
- Argote, L. (2013). *Organizational Learning: Creating, Retaining and Transferring Knowledge*, New York, Springer, 2nd edition.
- Argote L. and Epple D. (1990). "Learning-curves in manufacturing". *Science*, Vol. 247, pp. 920-924.

Argyris, C. (1994). "Good communication that blocks learning". *Harvard Business Review*, Vol. 72(4), pp. 77-85.

Argyris, C. and Schön, D. A. (1978). "Organizational Learning: A theory of Action Perspective". Massachusetts. *Reading, Addison-Wesley*.

Ashworth, R. E., Boyne, G. A., and Entwistle, T. (Eds.). (2010). *Public Service Improvement: Theories and Evidence*. Oxford University Press.

Azadi, M. and Saen, R. F. (2011). "A new chance-constrained data envelopment analysis for selecting third-party reverse logistics providers in the existence of dual-role factors". *Expert Systems with Applications*, Vol. 38(10), pp. 12231-12236.

Baker, A. C., Jensen, P. J., and Kolb, D. A. (2005). "Conversation as experiential learning". *Management Learning*, Vol. 36(4), pp. 411-427.

Bamber, G. J., Stanton, P., Bartram, T., and Ballardie, R. (2014). "Human resource management, Lean processes and outcomes for employees: towards a research agenda". *The international journal of human resource management*, Vol. 25(21), pp. 2881-2891.

Bapuji, H. and Crossan, M. (2004). "From questions to answers: reviewing organizational learning research". *Management Learning*, Vol. 35(4), pp. 397-417.

Barnett W. and Hansen M. (1996). "The red queen in organizational evolution". *Strategic Management Journal*, Vol. 17, pp. 139-157.

Barratt, M. (2004a). "Understanding the meaning of collaboration in the supply chain". *Supply Chain Management: An International Journal*, Vol. 9 (1), pp. 30-42

Barratt, M. (2004b). "Unveiling enablers and inhibitors of collaborative planning". *The International Journal of Logistics Management*, Vol. 15 (1), pp. 73-91

Barroso, A. P., Machado, V. H., Barros, A. R., and Machado, V. C. (2010). "Toward a resilient supply chain with supply disturbances". In *Industrial Engineering and Engineering Management (IEEM), 2010 IEEE International Conference on* (pp. 245-249). IEEE.

Bateman, N. (2005). "Sustainability: the elusive element of process improvement". *International Journal of Operations & Production Management*, Vol. 25(3), pp.261-276.



Bateson, G. (2000). *Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology*. University of Chicago Press.

Beccerra, M. and Gupta, A. K. (1999). "Trust within the organization: integrating the trust literature with agency theory and transaction costs economics". *Public Administration Quarterly*, Vol. 23(2), pp. 177-203.

Beer, M. and Eisenstat, R. (2000). "The silent killers of strategy: implementation and learning". *Sloan Management Review*, Vol. 41, pp. 29-40.

Beers, P. J., Boshuizen, H. P., Kirschner, P. A., and Gijssels, W. H. (2006). "Common ground, complex problems and decision making". *Group Decision and Negotiation*, Vol. 15(6), pp. 529-556.

Benner, M. J. and Tushman, M. L. (2003). "Exploitation, exploration, and process management: The productivity dilemma revisited". *Academy of Management Review*, Vol. 28(2), pp. 238-256.

Berente, N. and Lee, J. (2014). "How process improvement efforts can drive organisational innovativeness". *Technology Analysis & Strategic Management*, Vol. 26(4), pp. 417-433.

Berger, A. (1997). "Continuous improvement and kaizen: standardization and organizational designs". *Integrated Manufacturing Systems*, Vol. 8(2), pp. 110-117.

Bergen, M., Dutta, S., and Walker, O. C. Jr (1992). "Agency relationships in marketing: a review of the implications and applications of agency and related theories". *The Journal of Marketing*, Vol. 56(3), pp.1-24.

Berggren, C. (1993). "Lean production—the end of history?". *Work, employment and society*, Vol. 7(2), pp. 163-188.

Bessant, J. and Caffyn, S. (1997). "High-involvement innovation through continuous improvement". *International Journal of Technology Management*, Vol. 14(1), pp. 7-28.

Bessant, J. and Francis, D. (1999). "Developing strategic continuous improvement capability". *International Journal of Operations & Production Management*, Vol. 19(11), pp. 1106-19.

Bessant, J., Kaplinsky, R., and Lamming, R. (2003). "Putting supply chain learning into practice". *International Journal of Operations & Production Management*, Vol. 23, No. 2 pp. 167-184.

Bhuiyan, N. and Baghel, A. (2005). "An overview of continuous improvement: from the past to the present". *Management Decision*, Vol. 43(5), pp. 761-771.

Bianchi, C. (2016). *Dynamic Performance Management* (Vol. 1). Berlin: Springer.

Bisel, R. S., Messersmith, A. S., and Kelley, K. M. (2012). "Supervisor-subordinate communication: Hierarchical mum effect meets organizational learning". *The Journal of Business Communication* (1973), Vol. 49(2), pp. 128-147.

Blecker, T., Kersten, W., and Meyer, C. (2005). "Development of an approach for analyzing supply chain complexity". in *Mass Customization Concepts - Tools – Realization*, Blecker, T., Friedrich, Editor. Gito Verlag, Berlin, pp. 47-59.

Bloomfield, B. P. (1982). "Cosmology, knowledge and social structure: the case of Forrester and system dynamics". *Journal of Applied Systems Analysis*, Vol. 9, pp. 3-15.

Bolumole, Y. A. (2003). "Evaluating the supply chain role of logistics service providers". *The International Journal of Logistics Management*, Vol. 14(2), pp. 93-107.

Bolumole, Y. A., Frankel, R., and Naslund, D. (2007). "Developing a theoretical framework for logistics outsourcing". *Transportation Journal*, Vol. 46(2), pp. 35-54.

Bowen, Michael G. (1994). "System dynamics, determinism and choice: toward a reconsideration of the image of 'systems man'", *System Dynamics Review*, Vol. 10, pp. 87-90.

Bowersox, D. J. (1997). "Integrated Supply Chain Management; A Strategic Perspective". *Annual Conference Proceedings*, Chicago, Illinois: Council of Logistics Management, pp. 181-189.

Brehmer, B. (1980). "In one word: Not from experience". *Acta Psychologica*, Vol. 45, pp. 223-241.

Brown, J. S. and Duguid, P. (1991). "Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation". *Organization Science*, Vol. 2(1), pp. 40-57.

Burgess, K., Singh, P. J., and Koroglu, R. (2006). "Supply chain management: a structured literature review and implications for future research". *International Journal of Operations & Production Management*, Vol. 26(7), pp. 703-729.

Busse, C. and Marcus Wallenburg, C. (2011). "Innovation management of logistics service providers: Foundations, review, and research agenda". *International Journal of Physical Distribution & Logistics Management*, Vol. 41(2), pp. 187-218.

Cagliano, R., Caniato, F., Corso, M., and Spina, G. (2005). "Collaborative improvement in the extended manufacturing enterprise: lessons from an action research process". *Production Planning & Control*, Vol. 16(4), pp. 345-355.

Cameron, N. S. and Braiden, P. M. (2004). "Using business process re-engineering for the development of production efficiency in companies making engineered to order products". *International Journal of Production Economics*, Vol. 89(3), pp. 261-273.

Carroll, J., Sterman, J., and Marcus, A. (1998). "Playing the maintenance game: How mental models drive organizational decisions". *Debating Rationality: Nonrational Elements of Organizational Decision Making*, pp. 99-121.

Castillo-Montoya, M. (2016). "Preparing for interview research: The interview protocol refinement framework". *The Qualitative Report*, Vol. 21(5), pp. 811-831.

Cater-Steel, A., Tan, W. G., and Toleman, M. (2006). "Challenge of adopting multiple process improvement frameworks". In *Proceedings of 14th European Conference on Information Systems (ECIS 2006)*, pp. 1375-1386). European Conference on Information Systems.

Chakravorty, S. S. and Hales, D. N. (2017). "Sustainability of process improvements: an application of the experiential learning model (ELM)". *International Journal of Production Research*, Vol. 55(17), pp. 4931-4947.

Chen, I. J. and Paulraj, A. (2004a). "Understanding supply chain management: critical research and a theoretical framework". *International Journal of Production Research*, Vol. 42(1), pp. 131-163.

Chen, I. J. and Paulraj, A. (2004b). "Towards a theory of supply chain management: The constructs and measurements". *Journal of Operations Management*, Vol. 22 (2), pp. 119-150.

Cheng, S. K. and Kam, B. H. (2008). "A conceptual framework for analysing risk in supply networks". *Journal of Enterprise Information Management*, Vol. 22(4), pp. 345-360

Cheng, J. (2011). "Inter-organizational relationships and information sharing in supply chains". *International Journal of Information Management*, Vol. 31(4), pp. 374-384.

Christopher, M. (1992). *Logistics and Supply Chain Management*, Pitman Publishing, London.

Christopher, M. (2011). *Logistics & Supply Chain Management*. Pearson UK, 4<sup>th</sup> edition.

Cohen, J. D., McClure, S. M., and Angela, J. Y. (2007). "Should I stay or should I go? How the human brain manages the trade-off between exploitation and exploration". *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, Vol. 362, pp. 933-942

Collins, R., Dunne, T., O'Keeffe, M. (2002) "The "locus of value": A hallmark of chains that learn". *Supply Chain Management: An International Journal*, Vol. 7 (5), pp. 318-321

Coopey, J. (1995). "The learning organization, power, politics and ideology introduction". *Management Learning*, Vol. 26(2), pp. 193-213.

Coopey, J. and Burgoyne, J. (2000). "Politics and organizational learning." *Journal of Management Studies*, Vol. 37(6), pp. 869-886.

Crandall, R.E.; Crandall, W. R.; and Chen, C. C. (2015). *Principles of Supply Chain Management*, Second edition. Boca Raton, FL: CRC Press.

Creswell, J. W. and Miller, D. L. (2000). "Determining validity in qualitative inquiry". *Theory Into Practice*, Vol. 39(3), pp. 124-130.

Cross, R., Rebele, R., and Grant, A. (2016). "Collaborative overload". *Harvard Business Review*, Vol. 91(1), pp. 74-79

Crossan, M. M., Lane, H. W., and White, R. E. (1999). "An organizational learning framework: From intuition to institution". *Academy of Management Review*, Vol. 24(3), pp. 522-537.

Crossan, F. (2003). "Research philosophy: towards an understanding". *Nurse Researcher*, Vol. 11(1), pp. 46-55.

Cummings, T. G. and Worley, C. G. (2013). *Organizational Development and Change*. Stamford, CT: Cengage Learning.

Daniel, S. J. and Reitsperger, W. D. (1994). "Strategic control systems for quality: an empirical comparison of the Japanese and US electronics industry". *Journal of International Business Studies*, Vol. 25(2), pp. 275-294.

Darr E., Argote L., and Eppler D. (1995). "The acquisition, transfer, and depreciation of knowledge in service organizations: productivity in franchises". *Management Science*, Vol. 41(11), pp. 1750- 1762.

Davenport, T. H. (1993). *Process Innovation: Reengineering Work through Information Technology*. Boston, MA: Harvard Business School Press.

Dean, J. W. and Bowen, D. E. (1994). "Management theory and total quality: Improving research and practice through theory development". *Academy of Management Review*, Vol. 19, pp. 392-418.

Deepen, J. M., Goldsby, T. J., Knemeyer, A. M., and Wallenburg, C. M. (2008). "Beyond expectations: an examination of logistics outsourcing goal achievement and goal exceedance". *Journal of Business Logistics*, Vol. 29(2), pp. 75-105.

De Geus, A. P. (1997). "The living company". *Harvard Business Review*. Vol. 75. pp. 51-61.

Dodgson, M. (1993). "Organizational learning: A review of some literatures". *Organization Studies*, Vol. 14(3), pp. 375-394.

Dubois A., Hulthén, K., and Pedersen A. (2004). "Supply chains and interdependence: a theoretical analysis". *Journal of Purchasing & Supply Management*, Vol. 10, pp. 3-9.

Easterby-Smith, M., Araujo, L., and Burgoyne, J. (Eds.). (1999). *Organizational Learning and the Learning Organization: Developments in Theory and Practice*. Sage

Eisenhardt, K. M. (1989a). "Agency theory: An assessment and review". *Academy of Management Review*, Vol. 14(1), pp. 57-74.

Eisenhardt, K. M. (1989b). "Building theories from case study research". *Academy of Management Review*, Vol. 14(4), pp. 532-550.

Ellinger, A. E. (2000). "Improving marketing/logistics cross-functional collaboration in the supply chain". *Industrial Marketing Management*, Vol. 29(1), pp. 85-96.

Ellinger, A. E.; Ellinger, A. D.; and Keller, S. B. (2002). "Logistics managers' learning environments and firm performance". *Journal of Business Logistics*, Vol. 23, pp. 19-37.

Emery, C.R. (2009). "A cause-effect-cause model for sustaining cross-functional integration". *Business Process Management Journal*, Vol. 15 (1), pp. 93-108.

Engström, T., Jonsson, D., and Medbo, L. (1996). "Production model discourse and experiences from the Swedish automotive industry." *International Journal of Operations & Production Management*, Vol. 16(2), pp. 141-158.

Evangelista, P. and Sweeney, E. (2006). "Technology usage in the supply chain: the case of small 3PLs". *The International Journal of Logistics Management*, Vol. 17(1), pp. 55-74.

Fabbe-Costes, N., Jahre, M., and Roussat, C. (2008). "Towards a typology of the roles of logistics service providers as 'supply chain integrators'". In *Supply Chain Forum: An International Journal*, Vol. 9(2), pp. 28-43).

Fabbe-Costes, N., Jahre, M., and Roussat, C. (2009). "Supply chain integration: the role of logistics service providers". *International Journal of Productivity and Performance Management*, Vol. 58(1), pp. 71-91.

Fawcett, S. E. and Magnan, G. (2005). "Beware the Forces that Affect your Supply Chain". *Supply Chain Strategy: A Newsletter from Harvard Business School Publishing and the MIT Center for Transportation and Logistics*. Boston, MA.

Fawcett, S. E., Magnan, G. M., and McCarter, M. W. (2008a). "Benefits, barriers, and bridges to effective supply chain management". *Supply Chain Management: An International Journal*, Vol. 13 (1), pp. 35.

Fawcett, S. E., Magnan, G.M., and McCarter, M. W. (2008b). "A three-stage implementation model for supply chain collaboration". *Journal of Business Logistics*, Vol. 29 (1), pp. 93-110.

Fawcett, S. E., Jones, S. L., and Fawcett, A. M. (2012). "Supply chain trust: the catalyst for collaborative innovation". *Business Horizons*, Vol. 55, pp. 163–178.

Fayezi, S., O'Loughlin, A., and Zutshi, A. (2012). "Agency theory and supply chain management: a structured literature review". *Supply Chain Management: An International Journal*, Vol. 17(5), pp. 556-570.

Fiol, C. M. and Lyles, M. A. (1985). "Organizational learning". *Academy of Management Review*, Vol. 10(4), pp. 803-813.

Fleisher, C. S. (1991). "Using an agency-based approach to analyze collaborative federated interorganizational relationships". *Journal of Applied Behavioural Science*, Vol. 27(1), pp. 116-130.

Flint, D. J., Larsson, E.; Gammelgaard, B.; and Mentzer, J. T. (2005). "Logistics innovation: a customer value-oriented social process". *Journal of Business Logistics*, Vol. 26(1), pp. 113-147.

Flood, R. L. and Jackson, M. C. (1991). "Total systems intervention: a practical face to critical systems thinking". *Systems Practice*, Vol. 4(3), pp. 197-213.

Flynn, B. B., Huo, B., and Zhao, X. (2010). "The impact of supply chain integration on performance: A contingency and configuration approach". *Journal of Operations Management*, Vol. 28(1), pp. 58-71.

Forrester, J. W. (1961). *Industrial Dynamics*. MIT Press: Harvard, MA.

Frankel, R., Goldsby, T.J. and Whipple, J.M. (2002). "Grocery industry collaboration in the wake of ECR". *International Journal of Logistics Management*, Vol. 13(1), pp. 57-72.

Frederick, W. C. (1998). "Creatures, corporations, communities, chaos, complexity". *Business & Society*, Vol. 37(4), pp. 358-388.

Frooman, J. (1999). "Stakeholder influence strategies". *Academy of Management Review*, Vol. 24(2), pp. 191-205.

Garvin, D. (1993). "Building a learning organization", *Harvard Business Review*, July-August, pp. 78-91.

Garvin, D., Edmondson, A., and Gino, F. (2008). "Is yours a learning organization?", *Harvard Business Review*, March, Vol. 86(3), pp. 109-116

Gephart, M. A., Marsick, V. J., Van Buren, M. E., Spiro, M. S., and Senge, P. (1996). "Learning organizations come alive". *Training & Development*, Vol. 50(12), pp. 34-46.

Gimenez, C., van der Vaart, T., and Pieter van Donk, D. (2012). "Supply chain integration and performance: the moderating effect of supply complexity". *International Journal of Operations & Production Management*, Vol. 32(5), pp. 583-610.

Giri, B. C. and Sarker, B. R. (2017). "Improving performance by coordinating a supply chain with third party logistics outsourcing under production disruption". *Computers & Industrial Engineering*, Vol. 103, pp. 168-177.

Glaser, B. G. and Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Theory*. New Brunswick: Aldine Transaction.

Govindarajan, V. and Trimble, C. (2010). *The Other Side of Innovation: Solving the Execution Challenge*. Boston, MA: Harvard Business Press.

Guba, E. G. and Lincoln, Y. S. (1994). "Competing paradigms in qualitative research" in *Handbook of Qualitative Research*, Vol. 2(163-194), pp. 105-117.

Gupta, A. K., Smith, K. G., and Shalley, C. E. (2006). "The interplay between exploration and exploitation". *Academy of Management Journal*, Vol. 49(4), pp. 693-706.

Guest, G., Bunce, A., and Johnson, L. (2006). "How many interviews are enough? An experiment with data saturation and variability". *Field Methods*, Vol. 18(1), pp. 59-82.

Hall, G., Rosenthal, J., and Wade, J. (1993). "How to make reengineering really work". *Harvard Business Review*, Vol. 71(6), pp. 119-131.

Håkansson, H. and Snehota, I. (1995). *Developing Business Relationships*. Routledge: New York.

Hammer, M. (1997). *Beyond Reengineering: How the Process-Centered Organization is Changing our Work and our Lives*. New York: Harper Business.



Hammer, M. (2002). "Process Management and the Future of Six Sigma". *MIT Sloan Management Review* Vol. 43 (2), pp. 26–32.

Hammer, M. and Champy, J. (1993). *Business Process Reengineering*. London: Nicholas Brealey.

Hammer, M. and Stanton, S. (1999). "How process enterprises really work". *Harvard Business Review*, Vol. 77, pp. 108-120.

Harrington, H. J. (1995). "Continuous versus breakthrough improvement: Finding the right answer". *Business Process Re-engineering & Management Journal*, Vol. 1(3), pp. 31-49.

Hedberg, B. L. (1981). *How organizations learn and unlearn*. In: Nystrom, C. y Starbuck, W. (Eds.), *Handbook of organizational design*. pp. 3-27.

Hedberg, B. L., Nystrom, P. C., and Starbuck, W. H. (1976). "Camping on seesaws: Prescriptions for a self-designing organization". *Administrative Science Quarterly*, pp. 41-65.

Hertz, S. and Alfredsson, M. (2003). "Strategic development of third party logistics providers". *Industrial Marketing Management*, Vol. 32(2), pp. 139–149.

Hofmann, E. and Osterwalder, F. (2017). "Third-party logistics providers in the digital age: towards a new competitive arena?" *Logistics*, Vol. 1(2), pp. 2-28.

Hornibrook, S. A. (2007) *Agency Theory and Supply Chain Management: Goals and Incentives in Supply Chain Organisations*. Working paper. Kent Business School, University of Kent, Canterbury.

Horvath, L. (2001). "Collaboration: the key to value creation in Supply Chain Management", *Supply Chain Management: An International Journal*, Vol. 6 (5), pp. 205-7.

Howard, M., Vidgen, R., Powell, P. and Powell, J. (2007). "Exploring the use of QPID: A collaborative study of B2B in the automotive industry". *OMEGA-International Journal of Management Science*, Vol. 35(4), pp. 451-464.

Huo, B. (2012). "The impact of supply chain integration on company performance: an organizational capability perspective". *Supply Chain Management: An International Journal*, Vol. 17(6), pp. 596-610

Huber, G. P. (1991). "Organizational learning: the contributing processes and the literatures". *Organization Science*, Vol. 2(1), pp. 88-115.

Hult, G. T. M., Ketchen Jr, D. J., and Nichols Jr, E. L. (2003). "Organizational learning as a strategic resource in supply management". *Journal of Operations Management*, Vol. 21(5), pp. 541-556.

Jackson, M. C. (1991). "Systems Methodology for the Management Sciences". Plenum, New York.

Jaeger, A. M. and Baliga, B. R. (1985). "Control systems and strategic adaptation: Lessons from the Japanese experience". *Strategic Management Journal*, Vol. 6(2), pp. 115-134

Jarayam, J. and Tan, K. (2010). "Supply chain integration with third-party logistics providers". *International Journal of Production Economics*, Vol. 125(2), pp. 262-271.

Jensen, M. C. and Meckling, W. H. (1976). "Theory of the firm: managerial behaviour, agency cost and ownership structure". *Journal of Financial Economics*, Vol. 3(4), pp. 305–360.

Jerez-Gomez, P., Céspedes-Lorente, J., and Valle-Cabrera, L. (2005). "Organizational learning and compensation strategies: Evidence from the Spanish chemical industry". *Human Resource Management*, Vol. 44(3), pp. 279-299.

Jin, Y. and Hong, P. (2007). "Coordinating global inter-firm product development". *Journal of Enterprise Information Management*, Vol. 20(5), pp. 554-561

Kanter, R. M. (1994) Collaborative advantage: the art of alliances". *Harvard Business Review* Vol. 72, no. 4, pp. 96–108.

Kaynak, H. (2003). "The relationship between total quality management practices and their effects on firm performance". *Journal of Operations Management*, Vol. 21(4), pp. 405-435.

Ketchen, D. J. and Hult, G. T. M. (2007). "Bridging organization theory and supply chain management: The case of best value supply chains". *Journal of Operations Management*, Vol. 25(2), pp. 573-580.

Keys, P. (1988). "System dynamics: a methodological perspective". *Transactions of the Institute of Measurement and Control*, Vol. 10(4), pp. 218-224.

- Kim, D. (1993). "The link between individual and organizational learning". *Sloan Management Review*, Fall, Vol. 41, pp. 37-50.
- Klein, H. K. and Myers, M. D. (1999). "A set of principles for conducting and evaluating interpretive field studies in information systems". *MIS quarterly*, Vol. 23(1), pp. 67-93.
- Knemeyer, A. M., Corsi, T. M., and Murphy, P. R. (2003). "Logistics outsourcing relationships: customer perspectives". *Journal of Business Logistics*, Vol. 24(1), pp. 77-109.
- Kock, N. F. (1999). *Process Improvement and Organizational Learning: The Role of Collaboration Technologies*. IGI Global.
- Kouvelis, P. and Lariviere, M. A. (2000). "Decentralizing cross-functional decisions: coordination through internal markets". *Management Science*, Vol. 46(8), pp. 1049-1058.
- Kruger, D. J. (2015). "A systemic complex problem solving approach to process improvement". In *Management of Engineering and Technology (PICMET)*, 2015 Portland International Conference on (pp. 1387-1396).
- Kumar, R. S. and Pugazhendhi, S. (2012). "Information sharing in supply chains: An overview". *Procedia Engineering*, Vol. 38, pp. 2147-2154.
- Kuo, T. C. (2013). "The construction of a collaborative framework in support of low carbon product design". *Robotics and Computer-Integrated Manufacturing*, Vol. 29, pp. 174-183.
- Kwon, I.-W. G. and Suh, T. (2004). "Factors Affecting the Level of Trust and Commitment in Supply Chain Relationships". *Journal of Supply Chain Management*, Vol. 40, pp. 4-14.
- Lai, K. H., Ngai, E.W.T. and Cheng, T.C.E. (2005), "Information technology adoption in Hong Kong's logistics industry". *Transportation Journal*, Vol. 44(4), pp. 1-9.
- Lambert, D. M., Emmelhainz, M. A., and Gardner, J. T. (1996). Developing and implementing supply chain partnerships. *The international Journal of Logistics management*, Vol. 7(2), pp. 1-18.
- Lambert, D. M. and Cooper, M. C. (2000). "Issues in supply chain". *Industrial Marketing Management*, Vol. 29 (1), pp. 65-68

- Lambert, D. M., Knemeyer, A. M., and Gardner, J. T. (2004). "Supply chain partnerships: model validation and implementation." *Journal of Business Logistics*, Vol. 25(2), pp. 21-42
- Lambert, D. M., García-Dastugue, S. J. and Croxton, K. L. (2005). "An evaluation of process-oriented supply chain management frameworks". *Journal of Business Logistics*, Vol. 26(1), pp. 25-51.
- Lambert, D. M. and Schwieterman, M. A. (2012). "Supplier relationship management as a macro business process". *Supply Chain Management: An International Journal*, Vol. 17(3), pp. 337-352.
- Lambert, D. M. (2014). *Supply Chain Management: Processes, Partnerships, Performance*. 4<sup>th</sup> edition, Douglas M. Lambert editor. Supply Chain Management Institute.
- Lamming, R. (1993). *Partnership: strategies for innovation and lean supply*, Prentice-Hall, Hemel Hempstead.
- Lane, D. C., and E. Husemann. 2008. "Steering without Circe: attending to reinforcing loops in social systems". *System Dynamics Review*, Vol 24(1), pp. 37-61.
- Langley, J. (2012). "Third-party logistics study. The state of logistics outsourcing". *Results and Findings from the 16th Annual Study*. Capgemini.
- Larwood, L. and Whittaker, W. (1977). "Managerial myopia: self-serving biases in organizational planning". *Journal of Applied Psychology*, Vol. 62(2), pp. 194.
- Lassar, W.M., Kerr, J.L. (1996), "Strategy and control in supplier-distributor relationships: an agency perspective". *Strategic Management Journal*, Vol. 17 (8), pp.613-32.
- Laudon, K. C. and Laudon J. P. (2014) *Management Information Systems: Managing the digital Firm*. London: Pearson.
- Lawrence, T. B., Mauws, M. K., Dyck, B., and Kleysen, R. F. (2005). "The politics of organizational learning: integrating power into the 4I framework". *Academy of Management Review*, Vol. 30(1), pp. 180-191.
- Lee, T. W. (1999). *Using qualitative methods in organizational research*. Sage Publications: Thousand Oaks, CA

Lee, H. (2004). "The role of competence based trust and organizational identification in continuous improvement". *Journal of Managerial Psychology*, Vol. 19(6), pp. 623-639.

Lee, C.Y. and Lee, H.H. (2015). "The integrated relationship among organizational learning, TQM and firm's business performance: a structural equation modeling approach". *International Business Research*, Vol. 8(5), pp. 43-54

Leuschner, R., Rogers, D. S., and Charvet, F. F. (2013). "A meta-analysis of supply chain integration and firm performance". *Journal of Supply Chain Management*, Vol. 49(2), pp. 34-57.

Levinthal D. A. and March, J. G. (1993). "The myopia of learning". *Strategic Management Journal*, Vol. 14 (8), pp. 95-112.

Liddell, W. G. and Powell, J. H. (2004). "Agreeing access policy in a general medical practice: a case study using QPID". *System Dynamics Review: The Journal of the System Dynamics Society*, Vol. 20(1), pp. 49-73.

Locke, E. A. and Jain, V. K. (1995). "Organizational learning and continuous improvement". *The International Journal of Organizational Analysis*, Vol. 3(1), pp. 45-68.

Logan, M. S. (2000). "Using agency theory to design successful outsourcing relationships". *The International Journal of Logistics Management*, Vol. 11(2), pp. 21-32.

Lok, P., Hung, R. Y., Walsh, P., Wang, P., and Crawford, J. (2005). "An integrative framework for measuring the extent to which organizational variables influence the success of process improvement programmes". *Journal of Management Studies*, Vol. 42, pp. 1357-1381.

Loshin, D. (2011). *The Practitioner's Guide to Data Quality Improvement*. Morgan Kaufmann, Burlington, MA.

Lyneis, J. and Sterman, J. (2016). "How to save a leaky ship: capability traps and the failure of win-win investments in sustainability and social responsibility". *Academy of Management Discoveries*, Vol. 2 (1), pp. 7-32.

Macdonald, J. (1995). "Together TQM and BPR are winners". *The TQM Magazine*, Vol. 7(3), pp. 21-25.

Madison, D. (2005). *Process Mapping, Process Improvement, and Process Management: a Practical Guide for Enhancing Work and Information Flow*. Paton Professional.

Malhotra, D. and Murnighan, J. K. (2002). "The effects of contracts on interpersonal trust". *Administrative Science Quarterly*, Vol. 47(3), pp. 534-559.

March, J. G. (1991). "Exploration and exploitation in organizational learning". *Organization Science*, Vol. 2, pp. 71-87.

March, J. G. and Olsen, J. P. (1975). "The uncertainty of the past: Organizational learning under ambiguity". *European Journal of Political Research*, Vol. 3(2), pp. 147-171.

March, J. G., Sproull, L. S., and Tamuz, M. (1991). "Learning from samples of one or fewer". *Organization Science*, Vol. 2(1), pp. 1-13.

Marsick, V. J. and Watkins, K. E. (1999a). *Facilitating Learning Organizations: Making Learning Count*. Aldershot, England: Gower.

Marsick, V. J. and Watkins, K. E. (1999b). "Looking again at learning in the learning organization: a tool that can turn into a weapon!". *The Learning Organization*, Vol. 6(5), 207-211.

Matthews, R. L. and Marzec, P. E. (2017). "Continuous, quality and process improvement: disintegrating and reintegrating operational improvement?" *Total Quality Management & Business Excellence*, Vol. 28(3-4), pp. 296-317.

Matthews, R. L., MacCarthy, B. L., and Braziotis, C. (2017). "Organisational learning in SMEs: a process improvement perspective". *International Journal of Operations & Production Management*, Vol. 37(7), pp. 970-1006.

Maxwell, J. A. (2012). *Qualitative Research Design: An Interactive Approach*. Thousand Oaks, CA. SAGE.

McCarter, M. W., Fawcett, S. E., and Magnan, G. M. (2005). "The effect of people on the supply chain world: some overlooked issues". *Human Systems Management*, Vol. 24(3), pp. 197-208.

McCormack, K. (2001). "Business process orientation: do you have it?". *Quality Progress*, Vol. 34(1), pp. 51-58.

McCormack, K. P., Johnson, W. C., and Walker, W. (2003). *Supply Chain Networks and Business Process Orientation: Advanced Strategies and Best Practices*. New York: St. Lucie Press.

Melnyk, S. A., Stewart, D.M., and Swink, M. (2004). "Metrics and performance measurement in operations management: dealing with the metrics maze". *Journal of Operations Management*, Vol 22(3), pp. 209-218.

Melton, T. (2005). "The benefits of lean manufacturing: what lean thinking has to offer the process industries". *Chemical engineering research and design*, Vol. 83(6), pp. 662-673.

Mengis, J. and Eppler, M. J. (2008). "Understanding and managing conversations from a knowledge perspective: an analysis of the roles and rules of face-to-face conversations in organizations". *Organization Studies*, Vol. 29(10), pp. 1287-1313.

Mentzer, J. T., DeWitt, W., Keebler, J., Soonhoong, M., Nix N., Smith, C., and Zacharia, Z. (2001). "Defining supply chain management". *Journal of Business Logistics*, Vol. 22(2), pp. 1-25.

Meredith, J. (1998). "Building operations management theory through case and field research". *Journal of Operations Management*, Vol. 16(4), pp. 441-454.

Merriam, S. B. (2009). *Qualitative Research: A Guide to Design and Implementation*. San Francisco, CA: Jossey-Bass.

Merriam, S. B. and Tisdell, E. J. (2016). *Qualitative Research: A Guide to Design and Implementation*. San Francisco, CA: Jossey-Bass, 4<sup>th</sup> Ed.

Minnich, D. A. (2007). *Efficiency and Responsiveness of Supply Chains in the High Tech Electronics Industry*. Mannheim University Press, Baden-Württemberg. Doctoral Thesis, Mannheim University.

Mitki, Y., Shani, A. B., and Meiri, Z. (1997). "Organizational learning mechanisms and continuous improvement: A longitudinal study". *Journal of Organizational Change Management*, Vol. 10(5), pp. 426-446.

Morita, H. (2005). "Multi-skilling, delegation and continuous process improvement: a comparative analysis of US-Japanese work organizations". *Economica*, Vol. 72(285), pp. 69-93.

Morrison, E. W. and Milliken, F. J. (2000). "Organizational silence: A barrier to change and development in a pluralistic world". *Academy of Management Review*, Vol. 25, pp. 706-725.

Mutafelija, B. and Stromberg, H. (2003). *Systematic Process Improvement using ISO 9001: 2000 and CMMI*. Artech House.

Narus, J. A. and Anderson, J. (1996). "Rethinking distribution: adaptive channels". *Harvard Business Review*, Vol. 74(4), pp. 112-120.

Neuman, W. L. (2013). *Social Research Methods: Qualitative and Quantitative Approaches*. Pearson education.

Nishiguchi, T. (1994). *Strategic industrial sourcing: The Japanese advantage*. Oxford University Press on Demand.

Norrman, A. (2008). "Supply chain risk-sharing contracts from a buyers' perspective: content and experiences". *International Journal of Procurement Management*, Vol. 1(4), pp. 371-393.

Oliver, N., Delbridge, R., Jones, D., and Lowe, J. (1994). "World Class Manufacturing: Further Evidence in the Lean Production Debate 1". *British Journal of Management*, Vol. 5, pp. 53-63.

Oelze, N., Hoejmoose, S. U., Habisch, A., and Millington, A. (2016). "Sustainable development in supply chain management: The role of organizational learning for policy implementation". *Business Strategy and the Environment*, Vol 25(4), pp. 241-260.

O'Reilly, C. A. and Tushman, M. L. (2013). "Organizational ambidexterity: past, present, and future". *The Academy of Management Perspectives*, Vol. 27(4), pp. 324-338.

Orr, J. E. (1996). *Talking About Machines: An Ethnography of a Modern Job*. Cornell University Press.

Panayides, P. M. (2007). "Effects of organizational learning in third-party logistics". *Journal of Business Logistics*, Vol. 28(2), pp.133-158.

Pedler, M., Burgoyne, J., and Boydell, T. (1991). *The Learning Company. A Strategy for Sustainable Development*, McGraw-Hill, London.



Pepper, M. P. and Spedding, T. A. (2010). "The evolution of lean Six Sigma". *International Journal of Quality & Reliability Management*, Vol. 27(2), pp. 138-155.

Peters, L., Johnston, W., Pressey, A., and Kendrick, T. (2010). "Collaboration and Collective Learning: Networks as Learning Organizations". *The Journal of Business and Industrial Marketing*, Vol. 25(6), pp. 478-484.

Page, S. (2015). *The power of business process improvement: 10 simple steps to increase effectiveness, efficiency, and adaptability*. 2<sup>nd</sup> Ed. AMACOM.

Pastinen, M. (2010). *High-Performance Process Improvement*. Springer Science & Business Media.

Patton, M. Q. (1987). *How to use qualitative methods in evaluation* (No. 4). Sage.

Popper, K. (1961). *The Logic of Scientific Discovery*. New York: Science Editions.

Powell, T. C. (1995). "Total quality management as competitive advantage: a review and empirical study", *Strategic Management Journal*, Vol. 16(1), pp. 15-27

Powell, J.H. and Coyle R. G. (2005). "Identifying strategic action in highly politicized contexts using agent-based qualitative system dynamics". *Journal of the Operational Research Society*, Vol. 56, pp. 787-798.

Powell, J. H. and Swart, J. (2005). "This is what the fuss is about: a systemic modelling for organisational knowing". *Journal of Knowledge Management*, Vol. 9(2), pp. 45-58.

Powell, J. H. and Swart, J. (2006). "Men and measures: capturing knowledge requirements in firms through qualitative system modelling". *Journal of the Operational Research Society*, Vol. 57, pp. 10-21.

Power, D. (2005). "Supply chain management integration and implementation: a literature review". *Supply Chain Management: An International Journal*, Vol. 10(4), pp. 252–263.

Prahalad, C.K. and Hamel, G. (1990). "The core competence of the corporation". *Harvard Business Review*, Vol. 68(3), pp. 79–91.

- Preiss, K. J. and Murray, P. A. (2005). "Fashions of Learning: Improving supply-chain relationships". *Supply Chain Management: An International Journal*, Vol. 10 (1), pp. 18-25.
- Raisch, S., Birkinshaw, J., Probst, G., and Tushman, M. L. (2009). "Organizational ambidexterity: Balancing exploitation and exploration for sustained performance". *Organization Science*, Vol. 24(4), pp. 685-695.
- Rahmandad, H., Repenning, N. and Sterman, J. (2009). "Effects of feedback delay on learning." *System Dynamics Review*, Vol. 25(4), pp. 309-338.
- Remenyi, D., Williams, B., Money, A. and Swartz, E. (1998). *Doing Research in Business and Management: an introduction to Process and Method*. Sage.
- Repenning, N. P. (2001). "Understanding fire fighting in new product development". *Journal of Product Innovation Management*, Vol 18(5), pp. 285-300.
- Repenning, N. P. and Sterman, J. D. (2001). "Nobody ever gets credit for fixing problems that never happened: creating and sustaining process improvement". *California Management Review*, Vol. 43(4), pp. 64-88.
- Repenning, N. P. and Sterman, J. D. (2002). "Capability traps and self-confirming attribution errors in the dynamics of process improvement". *Administrative Science Quarterly*, Vol. 47, pp. 265-295.
- Rich, N. and Bateman, N. (2003). "Companies' perceptions of inhibitors and enablers for process improvement activities". *International Journal of Operations & Production Management*, Vol. 23(2), pp. 185-199.
- Ritchie, B. and Brindley, C. (2007). "Supply chain risk management and performance: A guiding framework for future development". *International Journal of Operations & Production Management*, Vol. 27 (3), pp. 303-322.
- Ritchie, B., Brindley, C.S., Armstrong, N. (2008), "Risk assessment and relationship management: practical approach to supply chain risk management". *International Journal of Agile Systems and Management*, Vol. 3 (3), pp. 228-47.
- Robb, J. (2007). *The early Mediterranean village: agency, material culture, and social change in Neolithic Italy*. Cambridge University Press.

Romano, P. (2003). "Co-ordination and integration mechanisms to manage logistics processes across supply networks". *Journal of Purchasing and Supply Management*, Vol. 9(3), pp. 119-134.

Ross, D. F. (1998). *Competing through Supply Chain Management: Creating Market Winning Strategies Through Supply Chain Partnership*, Boston, MA: Kluwer Academic Publishers.

Rossetti, C. L., and Choi, T. Y. (2008). "Supply management under high goal incongruence: An empirical examination of disintermediation in the aerospace supply chain". *Decision Sciences*, Vol. 39(3), pp. 507-540.

Ruiz-Torres, A. J., Cardoza, G., Kuula, M., Oliver, Y., and Rosa-Polanco, H. (2018). "Logistic services in the Caribbean region". *Academia Revista Latinoamericana de Administración*, Vol. 3(3), pp. 534-552.

Sabath, R. and Fontanella, J. (2002). "The unfulfilled promise of supply chain collaboration". *Supply Chain Management Review*, Vol. 6 (4), pp. 24-29.

Safari, A. (2016). "An effective practical approach for business process modeling and simulation in service industries". *Knowledge and Process Management*, Vol. 23(1), pp. 31-45.

Sahay, B. S. and Maini, A. (2002). "Supply chain: a shift from transactional to collaborative partners". *Decision*, Vol. 29, pp. 67-88

Sahay, B. S. (2003). "Understanding trust in supply chain relationships". *Industrial Management & Data Systems*, Vol. 103 (8), pp. 553-563.

Saldaña, J. (2009). *An introduction to codes and coding. The coding manual for qualitative researchers*, Sage.

Sauvage, T. (2003). "The relationship between technology and logistics third-party providers". *International Journal of Physical Distribution & Logistics Management*, Vol. 33(3), pp. 236-253.

Savolainen, T. and Haikonen, A. (2007). "Dynamics of organizational learning and continuous improvement in six sigma implementation". *The TQM Magazine*, Vol. 19(1), pp. 6-17.

Schal, T. and Schael, T. (1996). *Workflow Management Systems for Process Organizations*. Springer-Verlag New York, Inc.

Schilling, J. and Kluge, A. (2009). "Barriers to organizational learning: An integration of theory and research". *International Journal of Management Reviews*, Vol. 11(3), pp. 337-360.

Schrage, E. (1999). *Management Dilemmas: The Theory of Constraints Approach to Problem Identification and Solutions*, The St. Lucie Press/APICS Series on Constraints Management, St. Lucie Press, Boca Raton, Florida.

Selviaridis, K. and Spring, M. (2007). "Third party logistics: a literature review and research agenda". *The International Journal of Logistics Management*, Vol. 18(1), pp. 125-150.

Senge, P.M. (1990a). *The Fifth Discipline: The Art and Practice of the Learning Organization*. London: Century Business.

Senge, P. M. (1990b). "The leader's new work: building learning organizations". *Sloan Management Review* (Fall 1990), pp. 7-23.

Shani, A. R. and Docherty, P. (2009). *Learning by design: Building sustainable organizations*. John Wiley & Sons, pp. 19.

Simatupang, T. M. and Sridharan R. (2002a). "The Collaborative Supply Chain". *The International Journal of Logistics Management*, Vol. 13(1), pp.15-30.

Simatupang T. M., Wright A. C., Sridharan R. (2002b). "The knowledge of coordination for supply Chain Integration". *Business Process Management Journal*, Vol. 8 (3), pp. 289-308.

Simchi-Levi, D., Kaminsky, P., and Simchi-Levi, E. (2003). *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies*. Boston, MA: McGraw-Hill.

Simon, H. A. (1957). *Administrative Behaviour; a Study of Decision-Making Processes in Administrative Organizations*. 2nd ed. New York: Macmillan.

Simon, H. A. (1991). "Bounded rationality and organizational learning." *Organization Science*, Vol. 2(1), pp. 125-134.

Singh and Singh (2015). "Continuous improvement philosophy—literature review and directions". *Benchmarking: An International Journal*, Vol. 22(1), pp. 75-119.

Sinkovics, R. R. and Roath, A. S. (2004). "Strategic orientation, capabilities, and performance in manufacturer - 3PL relationships". *Journal of Business Logistics*, Vol. 25(2), pp. 43-64.

Skjoett-Larsen, T. (2000). "Third party logistics—from an interorganizational point of view". *International Journal of Physical Distribution & Logistics Management*, Vol. 30(2), pp. 112-127.

Smart, P. A., Maddern, H., and Maull, R. S. (2009). "Understanding business process management: implications for theory and practice". *British Journal of Management*, Vol. 20(4), pp. 491-507.

Smith, M. J. (1998). *Social science in question: towards a postdisciplinary framework*. Sage.

Spear, S. J. (2004). "Learning to lead at Toyota". *Harvard Business Review*, Vol. 82(5), pp. 78-91.

Spekman, R. E., Spear, J., and Kamauff, J. (2002). "Supply chain competency: learning as a key component". *Supply Chain Management: An International Journal*, Vol. 7 (1), pp. 41-55.

Stank, T. P., Keller, S. B., and Daugherty, P. J. (2001). "Supply chain collaboration and logistical service performance". *Journal of Business Logistics*, Vol. 22 (1), pp. 29-47

Stank, T. P., Goldsby, T. J., Vickery, S. K., and Savitskie, K. (2003). "Logistics service performance: estimating its influence on market share". *Journal of Business Logistics*, Vol. 24(1), pp. 27-55.

Stata, R. (1989). "Organizational learning: The key to management innovation". *Sloan Management Review*, Vol. 30, pp. 63-74

Sterman, J. D. (2000). *Business Dynamics: Systems Thinking and Modelling for a Complex World*. Irwin McGraw-Hill.

Sterman J. D. (2001). "System dynamics modeling: tools for learning in a complex world". *California Management Review*, Vol. 43(4), pp. 8-25.

Sterman, J. D. (2002). "All models are wrong: reflections on becoming a systems scientist". *System Dynamics Review: The Journal of the System Dynamics Society*, Vol. 18(4), pp. 501-531.

Stewart, P. and Garrahan, P. (1995). "Employee responses to new management techniques in the auto industry". *Work, Employment and Society*, Vol. 9(3), pp. 517-536.

Stock, J. (1997). "Applying theories from other disciplines to logistics". *International Journal of Physical Distribution & Logistics Management*, Vol. 27(9), pp. 515-39.

Tate, W. L., Ellram, L. M., Bals, L., Hartmann, E., and Valk, W. V. D. (2010). "An agency theory perspective on the purchase of marketing services". *Industrial Marketing Management*, Vol. 39(5), pp. 806-819.

Teece, D. J. (2007). "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance". *Strategic Management Journal*, Vol. 28(13), pp. 1319-1350.

Teece, D. J., Pisano, G., and Shuen, A. (1997). "Dynamic capabilities and strategic management". *Strategic Management Journal*, pp. 509-533.

Thomas, D. R. (2006). "A general inductive approach for analyzing qualitative evaluation data". *American journal of evaluation*, Vol. 27(2), pp. 237-246.

Thomas, J. B.; Sussman, S. W.; and Henderson, J. C. (2001). "Understanding 'strategic learning': Linking organizational learning, knowledge management, and sensemaking". *Organization Science*, Vol. 12(3), pp. 331-345.

Tripsas M. and Gavetti G. (2000). "Capabilities, cognition, and inertia: evidence from digital imaging". *Strategic Management Journal*, Vol. 21, pp. 1147-1161.

Trkman, P., Indihar Štemberger, M., Jaklič, J., and Groznik, A. (2007). "Process approach to supply chain integration". *Supply Chain Management: An International Journal*, Vol. 12(2), pp. 116-128.

Trompenaars, F. and Hampden-Turner, C. (2004). *Managing People Across Cultures*. Chichester: Capstone.

Trompenaars, F. and Coebergh, P. H. (2014). *100+ management models: How to understand and apply the world's most powerful business tools*. Infinite Ideas.

Tsang, E. (1997). "Organizational learning and the learning organization: a dichotomy between descriptive and prescriptive research". *Human Relations*, Vol. 50(1), pp. 73-89.

Tushman, M. L. and O'Reilly III, C. A. (1996). "Ambidextrous organizations: Managing evolutionary and revolutionary change". *California management review*, Vol. 34(4), pp. 8-29.

Van de Ven, A. H. (2007). *Engaged scholarship: A guide for organizational and social research*. Oxford University Press on Demand.

Van De Ven, A. (2011). "Engaged scholarship: Stepping out". *Business Strategy Review*, Vol. 22(2), pp. 43-45.

Van der Vaart, J.T. and Van Donk, D.P. (2008), "A critical review of survey-based research in supply chain integration". *International Journal of Production Economics*, Vol. 111(1), pp. 42-55.

Van Horne Institute (2018). "SCM Hiring Practices in the Calgary Region." Retrieved from the Van Horne Institute: <http://www.vanhorneinstitute.com/wp-content/uploads/2018/07/SCM-Hiring-Practices-in-the-Calgary-Region-4.pdf>

Van Laarhoven, P., Berglund, M., and Peters, M. (2000). "Third-party logistics in Europe—five years later". *International Journal of Physical Distribution & Logistics Management*, Vol. 30(5), pp. 425-442.

Veena, A., Venkatesha, H.R., and Nagendra Babu, K. (2010). "Supply Chain Collaboration Possibilities Among Organized and Unorganized Fresh Produce Retailers Under Indian Conditions". *Pioneering Solutions in Supply Chain Management: A Comprehensive Insight into Current Management Approaches*. Berlin: Erich Schmidt Verlag, pp. 91-102

Voss, C. (2002). "Case research in operations management". *International Journal of Operations & Production Management*, Vol. 22(2), pp. 195-219.

Wagner, S.M. (2008), "Innovation management in the German transportation industry". *Journal of Business Logistics*, Vol. 29(2), pp. 215-31.

Wallenburg, C. M. (2009). "Innovation in logistics outsourcing relationships: proactive improvement by logistics service providers as a driver of customer loyalty". *Journal of Supply Chain Management*, Vol. 45(2), pp. 75-93.

Wallenburg, C. M., Cahill, D. L., Knemeyer, A. M., and Goldsby, T. J. (2011). "Commitment and trust drivers of loyalty in logistics outsourcing relationships: cultural differences between the United States and Germany." *Journal of Business Logistics*, Vol. 32(1), pp. 83-98.

Walsh J. P. and Ungson G.R. (1991). "Organizational memory". *Academic Management Review*, Vol. 16(1), pp. 57-91.

Wang, Y., Gilland, W., and Tomlin, B. (2009). "Mitigating supply risk: dual sourcing or pprocess improvement?" *Manufacturing & Service Operations Management*, Vol. 12(3), pp. 489-510

Wang, C. L. and Ahmed, P. K. (2001). "Creative quality and value innovation: a platform for competitive success". *Proceedings of the 6<sup>th</sup> International Conference of ISO9000 and TQM*, Scotland, pp. 323-329.

Wang, C. L. and Ahmed, P. K. (2003). "Organizational learning: a critical review". *The Learning Organization*, Vol. 10(1), pp. 8-17.

Ward, J. A. (1994). "Continuous process improvement". *Information System Management*, Vol. 11(2), pp. 74-76.

Weber, N. (2001). "Illusions of marketing planners". *Psychology & Marketing*, Vol. 18(6), pp. 527-563.

Womack, J. P., Jones, D. T., and Roos, D. (1990). *The machine that changed the world*, Rawson Associates. New York.

Wong, C., Skipworth, H., Godsell, J., and Achimugu, N. (2012). "Towards a theory of supply chain alignment enablers: a systematic literature review". *Supply Chain Management: An International Journal*, Vol. 17(4), pp. 419-437.

Wu, C. W. and Chen, C. L. (2006). "An integrated structural model toward successful continuous improvement activity". *Technovation*, Vol. 26(5-6), pp. 697-707.



Yang, B.; Watkins, K.E.; and Marsick, V.J. (2004), "The construct of the learning organization: dimensions, measurement, and validation". *Human Resource Development Quarterly*, Vol. 5(1), pp. 31-55.

Yin, R. (2009). *Case Study Research: Design and Methods*, 4<sup>th</sup> Edition, Thousand Oaks, Sage Publications.

Yin, R. K. (2013). "Validity and generalization in future case study evaluations". *Evaluation*, Vol. 19(3), pp. 321-332.

Ying, W. and Dayong, S. (2005). "Multi-agent framework for third party logistics in E-commerce". *Expert Systems with Applications: an International Journal*, Vol. 29(2), pp.431-436.

Yukl, G. (2009). "Leading organizational learning: Reflections on theory and research". *The Leadership Quarterly*, Vol. 20(1), pp. 49-53.

Zhao, X., Huo, B., Selen, W., and Yeung, J. H. Y. (2011). "The impact of internal integration and relationship commitment on learning external integration". *Journal of Operations Management*, Vol. 29(1/2), pp.17-32.

Zsidisin, G. A. and Ellram, L. (2003). "An agency theory investigation of supply risk management". *Journal of Supply Chain Management*, Vol. 39(3), pp. 15-27.

Zsidisin, G. A., Ellram, L., Carter, J. R., and Cavinato, J. L. (2004). "An analysis of supply risk assessment techniques". *International Journal of Physical Distribution and Logistics Management*, Vol. 34, pp. 397-413.

Zsidisin G. A. and Smith M. E. (2005). "Managing supply risk with early supplier involvement: A case study and research propositions". *Journal of Supply Chain Management*, Vol. 41(4), pp. 44-57.

Zu, X. and Kaynak, H. (2012). "An agency theory perspective on supply chain quality management". *International Journal of Operations & Production Management*, Vol. 32(4), pp. 423-46

## **Appendix I**

### **Information sheet**

#### **PhD Research Project**

University of Exeter, UK

**Title:** A Systems perspective of operations process improvement: The organizational learning dilemma in complex and dynamic supply chain environments.

This multiple case-study project conducted by Martin Desmaras aims at gaining an understanding of how 3PL providers offering distribution center services go about improving their performance in fast-moving, time-sensitive and priority-changing supply chain environments. This research will particularly seek to understand how improvement practices are developed, implemented and assessed.

Fieldwork will be performed in two 3PL firms in Canada over a period of ten months, from October 2017 to July 2018, during which 15 interviews will be conducted at each company at the executive, professional, mid-range and support staff levels. In addition to the interviews, Qualitative Politicized Influence Diagrams (QPID) workshops will be conducted to understand the system dynamics of complex supply chain scenarios.

All data and information collected will be treated with strict confidentiality and no published work will contain any form of information that could identify the firm or the participants. All notes and/or recordings obtained will be kept safely and will only be accessible by the researcher. Further, all fieldwork material will be destroyed at the completion of the research.

The data and information provided by your firm will contribute to the field of management study in its endeavour to explore how supply chain firms learn and improve processes. It will also provide managers with a tool to better understand the enablers and inhibitors of process improvement efforts.

At the completion of the study, the researcher will offer each participating firm a presentation on the research findings related to their organization, including a systems diagram expressing a dynamic view of the multidimensional challenges identified.

### **Contact Details**

Should you have any questions or concerns about this study, please contact:

**Researcher:** Martin Desmaras

**Phone:** (403) 617-0800

**Email:** martin@crossbridge.ca

## **Appendix II**

### **Consent Form**

#### **Title of the project**

A Systems perspective of operations process improvement: The organizational learning dilemma in complex and dynamic supply chain environments.

#### **Details of study**

This PhD research project is conducted by Jose Martin Desmaras Luzuriaga and is under the supervision of Prof. Mickey Howard and Dr. Anne O'Brien, faculty members of the University of Exeter Business School, UK.

You are being asked to participate in a study aiming at gaining an understanding of how 3PL providers offering warehousing services go about improving their performance in fast-moving, time-sensitive and priority-changing supply chain environments. This research will particularly seek to understand how improvement practices are developed, implemented and assessed.

The data and information provided by you will be useful to the field of management study in its endeavour to explore how supply chain firms learn and improve processes.

Your responses will be treated with confidentiality and anonymity. All notes and/or recordings obtained from you will be kept safely and will only be accessible by the researcher. Further, no published work will contain any form of data that could identify you or your firm. At the completion of the research, all data and information collected from you will be destroyed.

#### **Contact Details**

Should you have any questions or concerns about this study, please contact:

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**Address:** University of Exeter Business School, Streatham Court, Rennes Drive, Exeter UK, EX4 4PU.

**Email:** Anne.O'Brien@exeter.ac.uk

## **Consent**

I confirm that I have been fully informed about the aims and purposes of the project and I am aware that:

- this research is fully voluntary and I may withdraw and discontinue participation at any time without any explanation and without there being any negative consequences;
- I may refuse to answer any question and ask for the recording to be turned off at any point during the interview. I am also entitled to rectify, erase or restrict the processing of any statement I have made.
- I may withdraw consent to the use of data and information from this interview within the next three weeks;
- any information provided by me will be used for the sole purpose of this study, which may include different forms of publication and presentations;
- all information provided by me will be dealt with strict confidentiality, including my personal information in this consent form which will not be linked to any data and information resulting from this interview.
- I will not receive any compensation from participating in this study;
- I have been given the opportunity to ask questions about this study and my participation, and all questions have been answered to my satisfaction.

I have read the above and give my full consent to voluntarily participate in this study.

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My signature

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Date

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My printed name

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Printed name of researcher

---

Signature of researcher

## **Appendix III**

### **Case study protocol**

#### ***Section 1 Work responsibilities and challenges***

1. Please briefly describe your work responsibilities and daily routines.
2. Who (e.g. manager / supervisor/ function) do you report to?
  - Who decides which tasks need to be prioritized on the shop floor?
  - How is this prioritization done? How do you assess it?
  - What motivates this prioritization?
  - What impact do prioritization decisions have on your work and on the firm's operational efficiency overall?
  - What would you describe as your key operational challenges? (daily? ongoing?) Please provide 2 or 3 examples.
3. How do these challenges impact on your ability to do your job and fulfill your responsibilities?

#### ***Section 2 Process improvement activities***

4. Are you currently (or have you been in the past) engaged in any process improvement efforts? (e.g. *Health and Safety, damaged goods, information system input, inventory accuracy, forecasting, CSM, etc.*). Describe 1 or 2 process improvement initiatives and your involvement (if relevant) in each:
  - What was the focus of the improvement?
  - How did the initiative come about?
    - Formal/informal?
    - Initiated locally? By senior management?
  - How was the initiative designed?

- Who did it involve?
- What did it achieve?
- Would you consider it a success? If so, why? If not, why not?
- Did you learn anything from this process? If so, what? And has this had an impact? What about learning by your team? And the firm overall? Can you provide an example of where learning might have taken place? If so, what was been the outcome?

5. Thinking about process improvement activities, do you consider the current efforts important? Please explain why (or why not).

6. What about your firm? Why do you think your firm engages in these improvement initiatives?

7. How relevant are process improvement initiatives to your work tasks? If not relevant, why is this so?

8. Thinking about your job and the firm overall, what do you believe is needed to improve processes?

- Skills? (e.g. *formal training, coaching, on-the-job, job shadowing, procedural manuals, etc.*)
- Who is involved?
- What is prioritized?
- (provide examples for above)

9. If you were asked to suggest ways that you (and your team/work unit) could better achieve your operational targets & improvement capabilities, what would you propose and why? Can you give an example of when this approach has been adopted? If so, how? If not, why?

### ***Section 3 Lessons learnt by you, your team and the organization over the longer term***

10. Overall, what do you see are the key lessons learned from process improvement activities, and how is this learning used by you/your team/the organization over time?



11. How effective generally is the organization:

- in motivating employees to be engaged in process improvement?
- at developing employees' skills and capacity to be able to contribute to improving the way work is done in order to achieve key business goals?

## Appendix IV

### **Pilot interviews and QPID workshop**

As part of an exploratory exercise to help define the research proposal, I conducted key-informant interviews and facilitated a QPID workshop with 3PL professionals in the Calgary region.

#### **Key-informant interviews**

Key-informant interviews were conducted with two 3PL professionals from two different companies. Each provided a distinct functional perspective – HR and operations. Questions were predominantly unstructured and mostly directed toward HR and organizational learning challenges in fast-moving warehouse environments.

Below is a brief synopsis of the interviews:

#### ***Interview 1 – HR Manager***

*DG has been playing a leading role in integrating processes in a leading global supply chain group in Western Canada.*

DG believes that understanding the “greater goals” of their group of companies is a constant challenge to all the units as individuals tend to look after their unit’s budget, team building and bonuses to the detriment of the needs of the organization as a whole. By way of example, different 3PL units may selfishly retain their own talents to attain their unit or departmental goals, without considering the needs of recently opened businesses that suffer from talent scarcity. Thus, firm-wide integration and coordination is mainly achieved through strategic alignment, standardization and corporate culture glue.

Organizational learning plays a central role in 3PL’s survival. Firms should ensure continuous improvement efforts are secured through the necessary training, employee buy-in, and bottom-up feedback. However, without the adequate allocation of financial resources and top-down support, such programs may fail. The interviewee also emphasized that every employee must be open to change and understand that “short-term pain is necessary for the organization’s long-term gain”. On a final reflection, the interviewee states that “there is no silver bullet to deal with the challenges associated to organizational learning”.

## ***Interview 2 – Senior operations supervisor***

*KM has been with a major player in the food storage and distribution nine years as senior operations supervisor. The company he works for is one of the largest food service supply chain companies in North America. Besides supervising warehouse operations, KM is responsible for forecasting, hiring operational staff, and is increasingly involved in integrating processes.*

As service locations expanded and family of brands grew in number, the 3PL transitioned from a family-run business to a professionally-managed firm. This enabled the firm to improve decision-making capabilities, lower change resistance levels and increase accountability.

To enhance its process improvement capabilities, the 3PL also shifted its hiring policy from being HR-based to supervisor-based. Today, as supervisors play a more active role in designing job descriptions and selecting candidates, turnover levels have been reduced, allowing the firm to reduce costs, build a stronger corporate culture, and collect critical feedback and experience. This resulted in greater performance and better conditions for organizational learning, especially geared towards process improvement.

Organizational learning is also important to help align the firm's corporate-wide decision-making process. This requires cross-functional efforts to reach a balanced strategy founded on information sharing, discussions, and internal negotiations.

Top-down support is also essential to implement organizational learning goals, as managers and supervisors need guarantees that top managers “have their backs” when they need to make difficult and potentially unpopular decisions, such as breaking deeply-rooted silo mentalities.

## ***Final reflections***

Firstly, both interviewees found the term “organizational learning” too abstract, requiring more tangible examples, such as “information sharing” and “alignment between departments”.

Secondly, neither interviewee seemed overly interested in expanding on the impact of ongoing daily operations on broader organizational goals. There were both interested in topics such as “two-way feedback”, “training programs”, and “process improvement”.

### **Pilot QPID workshop**

To further explore system dynamics techniques and work on the research questions, a pilot QPID exercise was conducted with three 3PL professionals with warehouse operational experience.

Below is a brief description of the role each one played/ is playing in warehouses in the Calgary region:

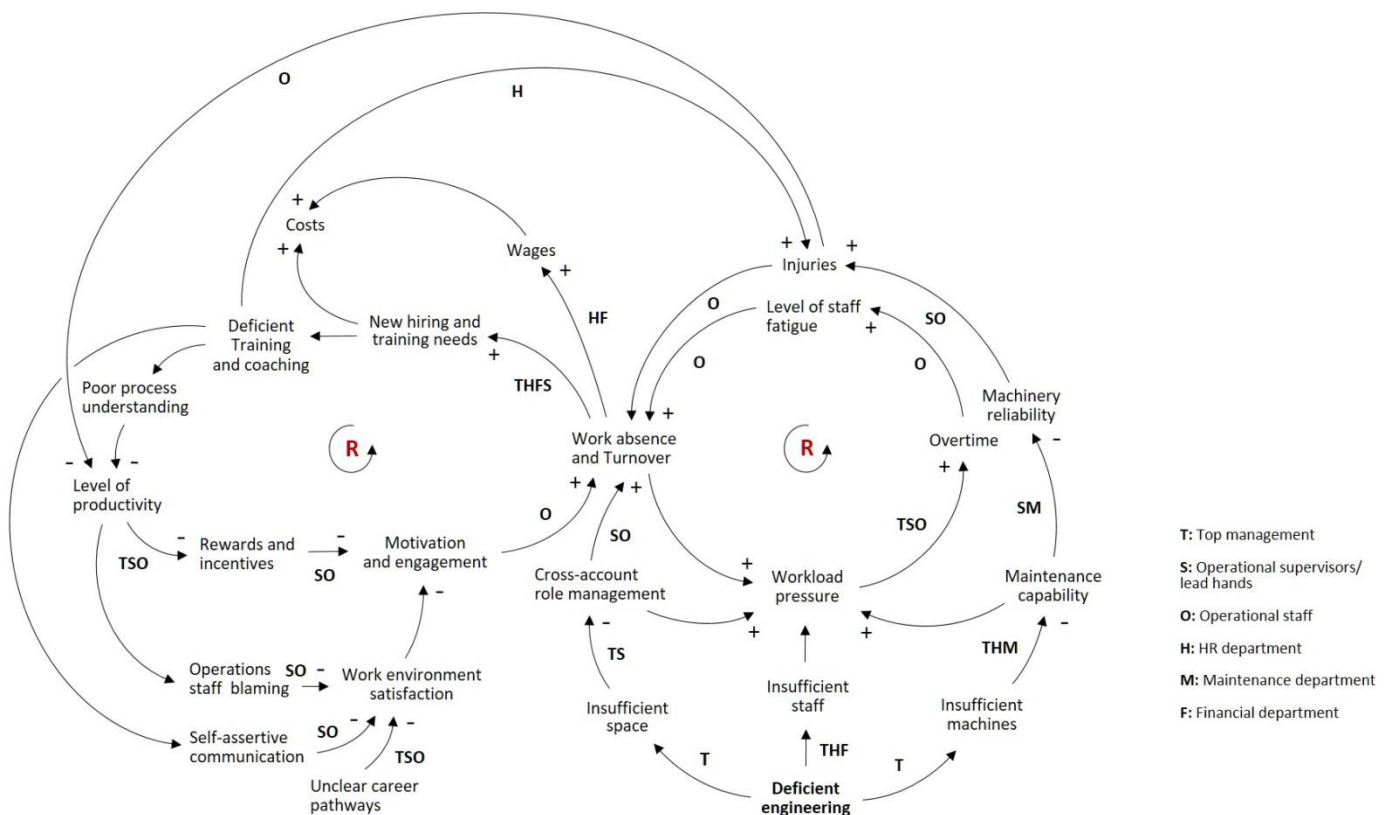
- 1) AF was a picker and forklift operator at a major food service supplier in Rocky View County and currently holds an operational supervisor position at a distribution center.
- 2) GR is currently a picker and forklift operator at one of the top food service supplier in Calgary, offering an array of temperature-controlled facilities throughout Canada and servicing an array of clients.
- 3) ID was a receiver at a department store and picker and forklift operator at a major distribution center.

The first round of this collaborative enquiry revolved around corporate goals and the participants' daily routines. The focus then shifted to one the 3PLs, where ID and GR had worked together in 2015 as pickers and forklift operators. During the discussions, they raised the case of a new and large account brought in that year which affected operations and employee morale negatively. The two 3PL professionals pointed to structural problems, such as poor management and insufficient learning capabilities, which combined with the deficient engineering and additional workload pressure related to the new account, created the perfect storm and pushed the firm's South East unit on a downward spiral. Occasionally, AF

contributed comments on best practices in managerial and learning processes, using other 3PLs as comparative cases.

The QPID workshop lasted for two hours and mainly revolved around the disruptive effects of new and unexpected warehouse pressures at a 3PL. The participants were also stimulated to describe the level of influence each actor and group of actors had over the dynamics of the system. GR and ID mostly agreed with the causal relation between variables that were being presented as the interview progressed, but differed in the weight/ importance they placed on each variable in some instances. By way of example, ID attributed morale deterioration to role disruption, while GR understood excessive workload was to blame.

Below is the resulting QPID diagram resulting from this exercise.



These exercises have supported the formulation of the research questions and in understanding the relevance of conflicting demands, the short-term performance versus long-term organizational learning dilemma, and 3PL environments as complex and dynamic systems. They also allowed to perceive the value of working with the QPID tool in the supply chain industry.